PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 115, No. 4 Thursday, July 23, 1942 Price Ten Cents

# Paper Men Meet To Discuss Mill Protection

## Wisconsin Manufacturers Hold Sessions To Consider Wartime Plan For Protection of Industrial Plants — C. H. Sage Elected President of Spruce Falls Power & Paper Co. — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 20, 1942—Numerous paper and pulp manufacturers of Wisconsin attended a meeting at Milwaukee July 14 to hear speakers on wartime protection of industrial plants. Sessions were held at Hotel Pfister and approximately 1,000 were present. Speakers included James R. Allen Chicago, Harry F. O'Connor, special agent of the FBI for the Milwaukee district, and Col. Raymond C. Kelly, former national commander of The American Legion and now serving with the Coast Artillery Corps. He formerly was in charge of civilian defense for the Sixth Corps Area.

Among the Wisconsin plants which have appointed labor-management committees in line with the campaign conducted by Donald Nelson, WPB chief, are: Allis-Chalmers Manufacturing Company, Milwaukee; Mosinee Paper Mills Company, Mosinee, Wis., and Appleton Machine Company, Appleton, Wis.

### C. H. Sage Heads Spruce Falls Co.

Charles H. Sage of Neenah, Wis., was elected president of the Spruce Falls Power and Paper Company, Kapuskasing, Ontario, at a meeting of the board of directors in Toronto July 10. He succeeds F. J. Sensenbrenner, who recently relinquished the presidency of Kimberly-Clark Corporation at Neenah to become chairman of the board. The Spruce Falls Company is an affiliate of Kimberly-Clark and The New York Times. Ernst Mahler of Neenah, was elected vice-president. Both Mr. Sage and Mr. Mahler are vice-presidents of Kimberly-Clark. The former has been with the corporation for 35 years and is also a member of the Dominion advisory committee of the newsprint division of the Wartime Prices and Trade Board of Montreal.

### Circuit Breaker Damages Mill

Damage amounting to approximately $5,000 resulted from switchboard explosions at the main mill of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., Wednesday evening of last week. All production at the mill was halted for nine hours.

One oil circuit breaker exploded and set off two others in succession. All wiring and cables on the 20-foot panel were burned out. George Federwitz, steam turbine operator, had just completed his hourly reading of instruments on the switchboard, and was at the further end of the panel from which the first explosion occurred. He summoned the mill's emergency fire brigade and the city fire department, and then was taken to a hospital for treatment for shock and the effects of smoke and fumes. He was discharged from the hospital the following day.

The power failure was blamed for a second fire a short time later. It broke out in sawdust and chips on a refuse conveyor, apparently because the ventilating system diverting hot blasts from the boiler room was shut off. The city power system, which is supplied from the mill, was cut off for about twenty minutes until emergency hookups could be made. Three of the paper machines were back in operation by five o'clock in the morning.

Two of six generators at Consolidated's mill at Stevens Point were disabled by an electrical storm the same night and some damage was caused to other equipment.

### Kimberly-Clark Employees Have Outing

Kimberly-Clark Corporation employees held their annual golf jamboree Saturday, July 18, at Ridgeway Golf Club at Neenah, Wis. Play was in progress during the afternoon, followed by a dinner at which more than 50 prizes were awarded. The jamboree also serves as a qualifying round for the annual Kimberly-Clark tournament, which includes five flights. Harold Kriekard was chairman of the jamboree.

### Gilbert Workers Plan Picnic

Gilbert Paper Company employees are making plans for their annual mill picnic, to be held early in August at the city park at Menasha, Wis. Clarence Elmgren has been named general chairman, and he has appointed a number of chairmen of events, including games, horseshoe and schafkopf tournaments, children's games, women's amusements and a supper.

# Chicago Reports Lower Demand for Paper

## Most Grades Affected By General Decline In Orders—Paper Men On Government Work—Federal Reserve Officer Warns of Inflation —Salesmen Plan Third Golf Outing—Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 20, 1942—The Chicago paper market continues to indicate the oversold condition which has been prevalent for several weeks. Backlogs reported by the mills show a plentiful supply of paper as compared to a demand not only a bit perplexed by previous conservation efforts but likewise experiencing an actual slowing up in the general business procedure. Retailing, one of the most accurate prognosticators of business, is now experiencing business decline with the effects of shortage of goods and curbs on selling now definitely discernible in this market at least. Some specialty papers have stood the test well but most grades are experiencing genuinely rough going. Krafts, one of the last to "fade" find demand comparatively slow while sulphites, in virtually all grades, are slow. Bonds and ledgers would be in a pretty unfortunate state, say reports, if government business were not available. Groundwood and newsprint offices indicate no improvement over last week and here and there, particularly in book papers, the slow demand and heavy supply has given indication that the price situation certainly bears watching. Waste papers continue to be a glut on the local market though discontinuance of the waste paper salvage efforts has had some good effects in cleaning up a part of the huge over-supply.

### Paper Men Take Up Government Work

Local paper and allied industries have recently shared heavily in War Production Board and Office of Defense Transportation assignments. During the past week nearly a dozen well known executives have been assigned to heavy War duties in relation to the WPB and ODT work. Included in the group are G. E. Wallace, president of the Creamery Package Company; E. J. Mulholland, Chicago Carton Company, both of whom are on the paraffined carton and parcel committee; George A. Vollmer, Atlas Boxmakers, Inc., appointed to the fibre box committee and A. W. Madson of Joliet, appointed a member of the paraffined carton and pail committee.

### Consider ODT Problems

A meeting of all "over-the-road" carriers who operate outside the 25 mile zone under the ODT will be held in Chicago on Saturday of this week at which time the carriers will elect a board of governors to represent them in the joint information office soon to be established in Chicago. Meanwhile, the three classifications of carriers have met during the week to develop a nine-man advisory board which is expected to work closely with the ODT in developing "pooling" services under the Order itself. The "pooling" is viewed by local operators as the only potentiality for relieving the heavy drain on tires and equipment which even now is causing tremendous shortages in this area.

### Federal Reserve Officer Warns of Inflation

Chicago paper sales executives were warned this week that stability of the money markets must be preserved both in wartime and the post war economy and that inflation now would mean deflation after the war. The statement was made by Dr. John K. Langum, manager of the research and statistical division of the Federal Reserve Bank of Chicago, who spoke at the Monday noon, July 13, meeting of the western division of the Salesmens Association of the Paper Industry. R. D. Patterson of the Flambeau Paper Company, assistant vice president of the Western Division, presided while George K. Gibson of the Mosinee Paper Mills, introduced Dr. Langum.

Dr. Langum pointed out that in the current federal fiscal year, which began July 1, the government would need $53,000,000,000 for the war effort and said that there were just two sources for obtaining this huge fund—taxes and borrowing with the important thing being just how the government will borrow. "An uncontrolled upward spiral of prices would disorganize the war effort, would constitute the most arbitrary and unfair and unequitable method of paying for the war, would raise the public debt still higher and would bring disastrous deflation after the war," warned Dr. Langum. "We must maintain the stability now and after the war of the money markets. We must minimize the problems of transition from a war economy to a peace time economy."

The speaker stressed the fact that the methods used to borrow are of the utmost importance because they will affect prices of materials, wages of labor, rents and the cost of living generally. The first essential need, the speaker declared, is to borrow as much as possible from current income and as little as possible through the expansion of bank credit with bank borrowing being resorted to as the last unavoidable step. Dr. Langum estimated that spendable funds in excess of taxes for the current fiscal year would be at $95,000,000,000 and the volume of purchasable goods at $65,000,000,000. He pointed out that unless the difference of $30,000,000,000 was not absorbed through taxation and savings there will be a scramble for goods; prices going up, the value of money declining.

### Salesmen Plan Golf Outing

Plans are being made for a record attendance at the third of the monthly golf outings sponsored by the Salesmens Association of the Paper Industry to be held at the Knollwood Country Club in Highland Park on July 24. According to Ray George, golf chairman, the sportiness of the course and the season itself should contribute to not only a record number of golfers but at the dinner proceedings in the evening which still produce some of the most outstanding choral work in these parts!

## Approve Community War Chest

The Employees' Mutual Benefit Association of the Marinette and Menominee Paper Company, Marinette, Wis., has approved establishment of a war chest fund for the community. The workers favor one annual drive for all the various war activities.

# BIRD

## *AND THE WAR PROGRAM*

★ All of our resources, devoted these many years to the building of paper mill machinery, are now being employed enthusiastically and without stint for the making of equipment for the Army and the Navy.

★ At the same time, and without sparing our utmost in war production, we aim to do everything we can for the industry with which we have been and always hope to be intimately and happily associated — the paper industry. Our service and repair facilities will be maintained to the very best of our ability in order that your Bird Machinery may continue to do its best work.

★ Call on us, by all means, for information and assistance on all problems of machine maintenance and conservation as well as for new equipment or parts for use in making papers that are essential to the war effort.

**BIRD MACHINE COMPANY · South Walpole, Mass.**

# Prospect of Newsprint Earnings Not Bright

## Analysis of Some Canadian Concerns Is Not Encouraging From Profit Viewpoint — Earnings On Capital Stock Less Favorable — New Method of Calculating Reserves For Depletion Uncertain.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 20, 1942—With the first half of the year over it is possible to form some idea of the prospects of the newsprint companies regarding their earnings on equities. These prospects do not appear to be particularly bright. Earnings in most cases will probably cover depreciation, depletion and interest charges and where there is no funded debt leave a little available for the senior stock in spite of the new scale of taxes and the drop in production schedules.

### Outcome of New Method Uncertain

There is some uncertainty concerning the final outcome of a new method of calculating reserves for depreciation. In former years newsprint companies usually allowed $3 a ton of paper produced as deductable, but due to changing conditions experience has shown that this amount was inadequate. Accordingly, last year, and in some cases earlier, reserves for depreciation have been substantially increased. The average write-off for last year is said to be about $6 to $7 a ton of paper produced. The income tax department has not yet made a ruling on this new policy. If the new policy is not allowed, stockholders will feel the impact of higher taxes.

### Smaller Earnings Expected

Taking everything into consideration it is apparent that both gross and net income of the Canadian newsprint companies for 1942 will be on a smaller basis than 1941. There are some exceptions, however—the Consolidated Paper Corporation for instance. Estimates show the decline in newsprint production will not be as serious as might be expected. Consolidated markets considerable surplus pulp and is a substantial producer of kraft products, as well as lumber.

Assuming revenues from outside sources will equal the figures for 1941, any decline in the operating profit on newsprint largely offset by lowered depreciation and depreciation reserves, bond interest charges should be covered by a satisfactory margin. Consolidated Paper should be able to show a small balance, after taxes, on the common stock. It earned 34 cents a share in 1941. The over-all result should be a modest improvement in net working capital position.

### Prospects on Junior Equities Poor

In assesing the prospects of increasing earnings on junior equities in the newsprint field, *The Financial Post* is of the opinion that such prospects are remote and that even maintenance of stock earnings is too much to expect. This authority adds: "On the other hand, there is reason at this stage to believe that all the companies will be able to provide for depreciation, depletion and interest charges, with something left over to add to working capital. Except for those companies with no funded debt, earnings on capital stock will probably be of negligible proportions."

## Michigan Div. to Meet July 30

The Michigan Division of the American Pulp and Paper Mill Superintendent's Association, is sponsoring an industrial rubber products conservation meeting to be held at the Community House of the Kalamazoo Vegetable Parchment Company in Parchment, Michigan, on the evening of July 30th at 8:00 P.M. Dinner will not be served on this occasion.

The program will feature an illustrated talk "Goodyear Wages War on Waste" and the distribution of the Goodyear Industrial Rubber Products Conservation Manual by Phil B. Eckels, of Grand Rapids—district representative of the Mechanical Rubber Goods Department of the Goodyear Tire and Rubber Company, who have created the Industrial Rubber Products Conservation Service as a nationwide effort to assist all industrial plant users of mechanical rubber products in protecting and conserving the life of such vitally important commodities.

Owing to the importance of this rubber conservation measure especially to the pulp and paper industry—a large attendance of paper mill executives as well as key plant operating men in the Kalamazoo area is expected at the Parchment meeting, during which an open forum on related problems will be held.

Chairman Henry Nendorf also wishes to announce at this time that the divisional officers and golf committee has decided not to have the Michigan Division's Annual Golf Party this year.

## Bob Huntley Feted

Robert F. Huntley who recently resigned as technical director of the Oswego Falls Corporation and The Sealright Corporation of Fulton, New York, has assumed the position of vice president and general manager of the Cowles Detergent Company of Cleveland, Ohio, manufacturers of silicate cleaning compounds.

Mr. Huntley has been associated with the Fulton organizations since his graduation from the New York State College of Forestry in 1927. He developed the technical work of these companies to a high degree of efficiency, his pioneer work in the field of paper sanitation research being especially noteworthy. He has been active in the affairs of TAPPI being one of the charter members of the Empire State Section and serving as President of this section in 1939 during which the section acted as host to a highly successful National Fall Convention of TAPPI held in Syracuse, New York.

On Wednesday evening, July 8, a large gathering of Mr. Huntley's former business associates, including a considerable number of out-of-town guests, gave him a farewell party and dinner at Ladd's Hotel, Caughdenoy, N. Y. He was presented with a beautiful writing and desk set as a token of the high regard and esteem in which he is held by his many friends in the paper industry. In Cleveland, Mr. Huntley will reside at 14122 South Park Boulevard, Shaker Heights.

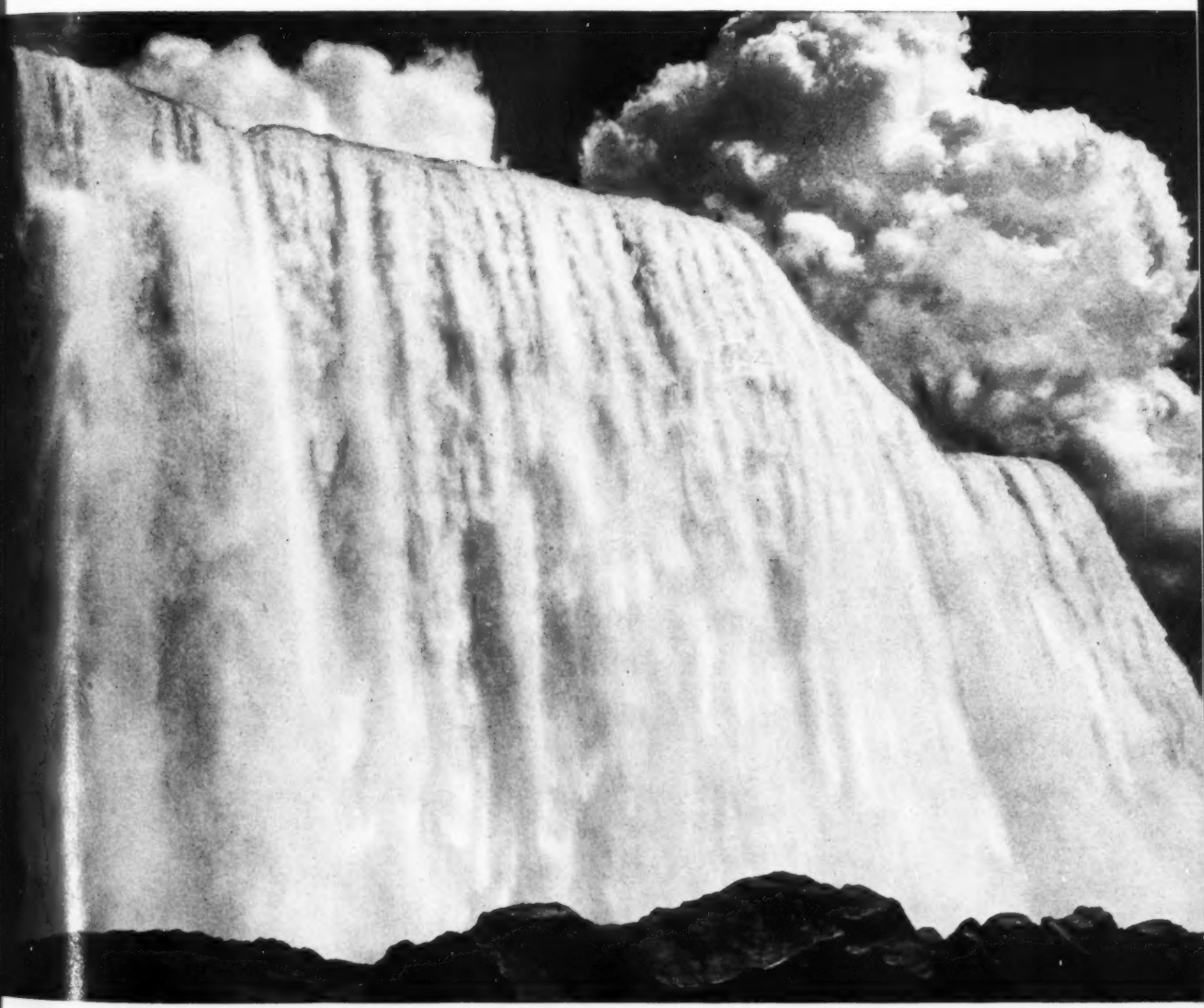
# *To have* ...and TO HOLD

Not for beauty alone is Niagara Falls famous. To people in this country, and in other countries, too, it is an expression of America. In its grandeur they sense the wild, free spirit that has swept this nation on and on with irresistible force. Like the never-ending wheat fields... like the bottomless mines... like the roaring factories and towering cities, it typifies the boundless energy of the U. S. A.

Our youth has found romance and pledged loyalty in the mists of Niagara. Our industry has found power in its cataracts to drive its great dynamos. And the very fact that its power and beauty are shared in peace and friendship with a neighbor country has made it a shrine of good will at which people the world over may take heart. Surely, these great Falls give voice to all that America is fighting for today—the permanent, steadfast, dynamic way of life that can be directed to the good of all but never tamed to slavery.

*We who work within sight and sound of Niagara Falls are devoting every ounce of our energies and facilities to speeding the flow of chemicals for Victory.*

**CAUSTIC POTASH • CAUSTIC SODA**
**PARA • CARBONATE OF POTASH**
**LIQUID CHLORINE**



**Niagara ALKALI COMPANY**
60 EAST 42nd STREET, NEW YORK, N. Y.

# Can Co. Is Developing New Fiber Container

## New Method of Producing Fiber Bodies On Metal Container Machines Is Now Being Perfected By American Can Co.—New Package May Also Serve For Some Liquid Products—Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 20, 1942—After many months of experimentation, the American Can Company has developed, it was announced a few days ago, a revolutionary method for the making of containers with fiber bodies on machines used for the manufacture of metal containers. This new method, as soon as the product has been tried and perfected through actual production, is considered the most important development within the container manufacturing industry within the past decade. The new method brings the first ray of hope to the vast number of American manufacturers of dry products whose merchandise was packed in cans, and whose business is threatened with dislocation by the various government orders restricting the use of tin and metal containers.

The new method will come to the rescue of those products known in the trade as "dry", such as drugs, cosmetics, spices, powders, etc. A few liquid products other than processed food, may also be affected. Many manufacturers of these products confronted with the problem of finding a container as satisfactory as the familiar tin can, and one that would retain the distribution and merchandising values already associated with this container, have faced a considerable loss of business. Those who experimented with new containers, have often found that the shelf-appeal or recognition of their product has been lost by appearing in a container of a different size and shape, unfamiliar to the consumer. Under the new method of fiber container manufacture, the merchandising factors that stemmed from the metal containers, will be preserved.

### Conastea Mill Flooded

Floods rolling through north central Pennsylvania have taken a large toll of lives and damaged or destroyed business establishments and industrial plants. The flood waters swirled from the upper tributaries of the Susquehanna, Clarion and Allegheny Rivers in Pennsylvania, and cut a swath through McKean, Potter and Elk counties. At Johnsonburg in Elk County, the Canastea Paper Company plant employing about 1,000 men was flooded to a depth of several feet. A crew of 120 men in the plant overnight put together a raft and rescued eighteen marooned families from bottom land homes.

### Paper Men on Advisory Committees

According to an announcement from the Office of War Information, eight more New Jersey industries are represented on industry advisory committees for the War Production Board, among whom are J. W. Kieckhefer, Kieckhefer Container Corporation, Camden, C. A. Agar, Agan Container Division, International Paper Company, Whippeny, Joseph W. Schiffenhaus, of Schiffenhaus Brothers, Newark, Louis Wildstein, of Samuel Wildstein and Son and R. B. Smallwood, president, T. J. Lipton, Inc., Hoboken.

### Miss Thompson Called to Navy

Miss Sybilla C. Thompson, of 715 W. 7th street, Chester, liaison officer for the women employes of the Scott Paper Company, for the past two and a half years, has been called to active duty by the Navy. After a week's vacation in Charlestown, South Carolina, Miss Thompson will report to the Philadelphia Naval Hospital.

Mrs. Christine E. Hayes of the first aid staff of the Scott Paper Co.'s plant, will carry on during Miss Thompson's leave of absence.

## Price Regulations on Greeting Cards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 22, 1942—A price regulation which will establish a method by which manufacturers, wholesalers and retailers of Christmas greeting cards will be able to compute their maximum prices for this type of merchandise will be issued in advance of the fall retail selling season, Price Administrator Leon Henderson announced today.

The administrator also announced that manufacturers and wholesalers may set tentative prices for greeting cards pending the issuance of the regulation. In all purchases, where such tentative prices are set, however, the purchasers must be clearly notified that the prices are tentative and as such may be reduced if found to be in excess of those established by the regulation when it is issued.

The decision to allow open-pricing during the time OPA prepares the regulation was made to facilitate trading and allows retailers to order their cards on memorandum prices subject to adjustment to conform with the new regulation.

The new regulation will simplify the procedure for computing maximum prices for greeting cards. At the present time the maximum prices are determined according to provisions of the General Maximum Price Regulation which based ceiling prices on the March, 1942 levels. Since most of the cards were not delivered or offered for delivery during March, the sellers are experiencing difficulty in pricing their cards under Section 3 (b) of the General Maximum Price Regulation.

Manufacturers who are attempting to establish their ceiling prices under the provisions of the General Maximum Price Regulation are advised that memorandum prices are not "March offering prices" as described in Section 2 of that Regulation. Manufacturers and wholesalers who delivered articles as samples or on memorandum during March, or who quoted prices for goods during March on which delivery would not take place until this summer or fall, may not use the prices at which these articles were offered to determine their prices. Such goods purchased on memorandum may have been priced higher than similar goods actually delivered during March.

## Nelson R. Davis Dead

PORTLAND, Me., July 20, 1942—Nelson R. Davis, 65, of 22 Waltham Street, Westbrook, former superintendent of the S. D. Warren Paper Company, died Wednesday night, July 15, in a Portland hospital. Mr. Davis had been in ill health several months.

He was born at Sanford and as a young boy moved with his parents to Watertown, Mass. He attended the public schools of Watertown and later entered Harvard College and was graduated in the class of 1901, receiving the bachelor of arts degree. He went to Westbrook in July, 1901, and entered the employ of the S. D. Warren Paper Mill, and had charge of the chemical department two years. Mr. Davis had

NELSON R. DAVIS

been considered one of the foremost production men in the paper-making industry.

Nelson Davis was elected the third president of the American Pulp and Paper Mill Superintendents Association at Springfield, Mass., June 2, 1923, and served two terms and continued to be prominently connected with the association for a long number of years.

In 1925 Mr. Davis was elected president of the Hoskell Silk Mill in Westbrook which is no longer in business.

He retired as superintendent of the S. D. Warren Company in 1932, and was advisor on investments to the treasurer of Bowdoin College several years.

Mr. Davis was a director of the Westbrook Trust Company many years and also was a director of the Fidelity Trust Company when the Westbrook Trust was part of the Fidelity Trust. He was president of the Warren Congregation Church and was a member of several parish committees. He was a director and officer of the Falmouth Building and Loan Association of Portland. He was a former member of the Westbrook Rotary Club, of Warren Phillips Lodge, F. & A. M., and the Boylston Chemical Society of Cambridge, Mass.

Surviving are three daughters, the Misses Margaret, Dorothy and Barbara Davis, all of Westbrook.

Funeral services were held at 2:30 P. M. Saturday at the Warren Congregational Church. Interment was in Woodlawn Cemetery, Westbrook.

## Lower Pulpwood Prices in Prospect

WASHINGTON, D. C., July 22, 1942—A regulation establishing much lower prices than current market rates for pulpwood will be issued soon by the Office of Price Administration in order to protect the price ceilings on products produced from it—such as wood pulp and newsprint—Price Administrator Leon Henderson announced today.

Prices for peeled spruce and other species of pulpwood, especially the wood cut and peeled this summer in the New England states and Michigan, Wisconsin and Minnesota, known to the trade as the Lake States, have been steadily advancing so that the cost to producers of wood pulp has risen about 25%. Prices per cord of peeled spruce in the Lake States have reached $16.50 and to $17 in New England states according to an investigation made by OPA. The current rates represent a boost of about $4 per cord over first quarter prices.

The advance in the costs of this principal raw material has endangered the position of the wood pulp producers who cannot sell their product for more than the prices established by Maximum Price Regulation No. 114. Accordingly, if the prices of wood pulp are advanced, the ceiling of prices over newsprint and other papers made from it would be threatened. Newsprint prices are controlled by Maximum Price Regulation No. 130.

OPA's investigation shows that some suppliers of pulpwood have been holding back stocks in anticipation of higher prices in the future. Many pulp producers, as a result, have had to contract for wood from distant sources at increased costs in transportation. Fears that the supply of wood would continue to diminish has also caused producers to bid up prices in competition among themselves until the price of wood no longer bears its usual relation to its cost.

A reduction of prices at the raw material level is in conformity with the policy announced by Mr. Henderson when the General Maximum Price Regulation was issued. The roll-back, which it will effect, will eliminate the "squeeze" on wood pulp producers and eventually on the manufacturers of newsprint and other papers.

## St. Regis Expand Machine Shop Div.

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., July 20, 1942—Plans are under way for a gradual enlargement of the working force at the engineering division of the St. Regis Paper Company in this city in order to fill a large new contract. Announcement was made that the start of production on the new order has been held up for several weeks while awaiting materials. At the start about 25 or 30 additional workers will be employed with the number being increased to about 150 workers at the end of a period of three months. When the contemplated operations are started about 90 per cent of the local plant will be engaged in war production, it was announced. A considerable part of the plant is now operating on a schedule of twenty-four hours in war production efforts. Contrasts for parts for use by the army and navy continue to utilize a substantial portion of the equipment and facilities of the machine shop division and this section is expected to be exceptionally busy for the remainder of the war. The main plant of the concern with its subsidiary, Taggart Brothers, are both turning out government contracts for heavy multiwall paper bags.

## Hospital Plan for Schweitzer Workers

ELIZABETH, N. J., July 20, 1942—Peter J. Schweitzer, Inc., Elizabeth, N. J., has adopted for the benefit of its employees a plan known as the Medical-Surgical Plan of New Jersey, operated under the auspices of a non-profit organization, Hospital Service Plan of New Jersey.

Peter J. Schweitzer, Inc., manufacturer of cigarette paper, is the first organization in the U. S. to adopt this plan. Heretofore, there has been in exist-

SIGNING FOR NEW FORM OF INSURANCE
Left to right: M. Peter Schweitzer, secretary of the Schweitzer organization; Dr. Norman Scott (standing), medical director of the Medical-Surgical Plan of New Jersey; H. Theodore Sorg, president of the Hospitalization Plan of New Jersey.

ence only a hospitalization plan which took care of hospital expenses for patients entering the hospital for surgical operations only. The new plan covers hospital cases, requiring no surgery, as well as surgical cases.

In addition to the above, the Schweitzer company has already in operation a plan which covers life insurance and loss of wages due to sickness and accident. These plans cover not only the workmen, but their families as well. The entire cost of all of the plans is borne by the company. All together, over 2,000 people receive the benefits of these plans.

This company has always felt that no workman can perform his duties properly, if he is burdened with financial worries, caused by expenses incurred through his or his family's illness. In addition it is our belief that in many cases, such expenses seriously impair the standard of living of the employee.

It is the opinion of the officers of Peter J. Schweitzer, Inc., that if such a plan were adopted by the large industrialists in this country, it would avert the necessity of socialized medicine and would eliminate to a large extent the necessity of free clinical treatment as is now being practiced.

## Christmas Boxes not Prohibited

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 22, 1942—In response to numerous inquiries concerning the use of Christmas and gift boxes, William W. Fitzhugh, Chief of the Folding & Set-Up Box Section, Containers Branch, WPB, said today that in view of the presently abundant supply of paper board no restrictions on the manufacture of any type of paper box are contemplated at present, and that the manufacture and use of gift and Christmas boxes are not prohibited.

## Ends Special Machinery Branch

WASHINGTON, D. C., July 20, 1942—The Special Industrial Machinery Branch of WPB was dissolved today by an administrative order announced by Amory Houghton, Director General for Operations. The work of the branch will be assigned to other WPB branches.

Operations of the Special Industrial Machinery Branch have been tied in closely with other WPB branches, and it is believed that more efficient administration can be achieved if this work is delegated to the branches most concerned with it.

Six sections were continued within the branch. There were: Pulp and Paper, Printing and Publishing Machinery; Food Processing Machinery; Petroleum Machinery; Chemical and Allied Machinery; Textile and Shoe Machinery; and General Industrial Machinery, such as woodworking, lumber, sawmill machinery, plastics and tire molding machinery, cement, stone and ceramics machinery.

Pulp and paper machinery will be transferred to the Pulp and Paper Branch and printing and publishing machinery to the Printing and Publishing Branch. Petroleum machinery will be removed from WPB operations and assigned to the Office of Petroleum Coordinator.

Orders originating in the Special Industrial Machinery Branch will be administered in the future by other WPB Branches.

L-83, imposing general restrictions on distribution of industrial machinery, will be administered by the Appeals Branch under the direction of A. E. Collins.

L-159, relating to plastics machinery, will be administered by the Chemicals Branch under the direction of James A. Lawson.

L-143, dealing with tire machinery and equipment, will be administered by the Rubber Branch under Harry S. Rogers.

P-53, relative to priority assistance for manufacturers of textile machinery, will be administered by the Textile Branch under R. S. Dempsey.

## Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 22, 1942—The Government Printing Office has received the following bids for 137,600 pounds of 39 x 62¾ offset book paper: Bermingham & Prosser Company, 5.82 cents; Aetna Paper Company, 7.56 cents; Walker Goulard Plehn Company, 5.23 cents; Stanford Paper Company, 6.25 cents; R. P. Andrews Paper Company, 5.29 cents; Old Dominion Paper Company, 7.0858 cents; Cauthorne Paper Company, Inc., 6.9 cents; Mudge Paper Company, 5.64 cents; Paper Corp. of U. S., 6.17 cents; Whitaker Paper Company, 5.23 cents; Butler Paper Company, 6.19 cents; Bradner Smith Company, 5.2933 cents; D. L. Ward Company, 7.22 cents.

For 175,000 pounds of white offset book paper in 56½ inch rolls: Bermingham & Prosser Company, 5.32 cents; Aetna Paper Company, 7.06 cents; Walker Goulard Plehn Company, 4.95 cents; Stanford Paper Company, 6.71 cents; R. P. Andrews Paper Company, 4.73 cents; Cauthorne Paper Company, Inc., 6.40 cents; Paper Corp. of U. S., 5.52 cents; Whitaker Paper Company, 4.79 cents; Butler Paper Company, 5.57 cents; Bradner Smith & Company, 5.046 cents; D. L. Ward Company, 6.88 cents; and Bulkley Dunton & Co., 5.39 cents.

# An Emergency Statement

## to Industrial Executives

Manufacturers—large and small—have a special opportunity to aid the war effort—over and beyond the contribution they are already making.

That opportunity is Salvage.

***No matter how much scrap is dug out of the attics and basements of homes, the fence corners and gullies of farms, war production factories will still fall far short of the scrap material needed unless the manufacturers of America get 100 per cent behind the program.***

Six million additional tons of scrap iron and steel alone, as well as vast quantities of rubber and other materials, are urgently required to bring our war program to full strength.

Whether you are a lace curtain manufacturer or a maker of drop forgings the obligation is the same.

The job is more than simply collecting scrap material around the plant, or turning in the scrap which is created on the premises. It is a job of condemning obsolete machinery, clearing out unusable stocks, obsolete tools, dies, drills, fixtures, etc.

All unusable material, equipment, and stocks should be scrapped at once and put back into war production.

***The philosophy of "It may come in handy some day" must give way to the doctrine of "My country needs it now."***

Patriotic volunteer committees of executives are already hard at work on this problem in 421 industrial centers.

The Industrial Section of the Conservation Division has a corps of technical advisers who are prepared to work with all types of industries.

A thoroughgoing Salvage program in a factory can not only help meet the present emergency, but can help prepare that factory for its postwar operations through the elimination of once wasteful practices.

**1** The first thing to do is to put some one individual in charge of Salvage in all departments of your business and give him not only the responsibility to act, but the authority to act.

**2** The next thing to do is to get in touch with your local Industrial Salvage Committee and map out a detailed program with the materials and ideas that are available. Their program contains 17 simple steps.

If in any doubt, write or wire at once to the Conservation Division, War Production Board, Railroad Retirement Building, Washington, D. C.

*All unusable material, equipment, and stocks should be scrapped at once and put back into war production. Please read this message and act* **now.**

D. M. NELSON, CHAIRMAN, WAR PRODUCTION BOARD

***This job is being tackled by a democratic nation through the volunteer efforts and initiative of democratically managed industrial concerns, rather than through directives or compulsion as it is done in Axis countries.***

Every executive, every superintendent, every foreman and every worker in every plant can help.

The main thing is to get started now.

***This message approved by Conservation Division***

**WAR PRODUCTION BOARD**

*This advertisement paid for by the American Industries Salvage Committee (representing and with funds provided by a group of leading industrial concerns).*

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**SCRAP FROM HOMES AND FARMS**—As individuals, search your home from attic to basement. Search your garage. Look at the old familiar things in a new light. Do you need them—or can you get along without them? Your country needs every pound of scrap iron and steel, other metals, rubber, rags and burlap to provide the fighting materials our armed forces must have. Take your scrap to the nearest Salvage Depot—give it to a charity—or sell it to a Junk dealer. . . . If you live on a farm, consult your County War Board or your farm implement dealer. In any case, your scrap will flow back into the blood stream of our war production.

# Obituary

### Ulysses Grant Farmer

Grant Farmer, Superintendent of the Fibreboard Products, Inc., mill in Los Angeles died on July 1. Ulysses Grant Farmer was born in Uniontown, Pa., August 3, 1885. He first started his papermaking career in Noblesville, Indiana, at the age of 16. He came to the west coast in 1906 and worked with the Crown Willamette Paper Company at Camas, Washington, during 1907. In 1908 he went to Antioch, California, working for a company which is now Fibreboard Products Inc., but which at that time was called the California Paper & Board Mills, a division of The Paraffine Companies.

Early in 1909 Grant Farmer came to the El Rey Paper Company in Los Angeles where he worked as a machine tender. In 1912 he returned to Antioch and worked there until the mill was destroyed by fire November 12, 1912. After the fire he occupied himself for a short time as an electrician, doing rewiring and similar jobs.

When the Antioch mill was rebulit in 1913 he worked there again until Sept. 1, 1915, at which time he came to Los Angeles. His first job in the Los Angeles mill was on the Sheet Liner, later he was a machine Tender, then Boss Machine Tender and in 1926 he was made Superintendent of the Board Mill and continued in that capacity until his death July 1, 1942.

He is survived by three children; a daughter Lois, and two sons, Richard and Billy.

Grant Farmer was one of the founders of The Papermakers and Associates of Southern California and was Chairman for 1942-1943. He was a memzer of the American Pulp and Paper Mill Superintendents Association, and a member of the South Gate Lodge of F. A. A. M.

His funeral, a Masonic ceremony, was held July 3rd at Pierce Brothers Mortuary. He was cremated and his ashes rest in a niche at Forest Lawn Memorial, Los Angeles.

### John Moravec

VANCOUVER, B. C., July 20, 1942—John Moravec, aged 88, a pioneer in the pulp and paper industry in Europe and British Columbia, died at his home in Vancouver, B. C., recently.

Born in Old Austria, he was connected with the pulp industry from the beginning of its development. He came to Chatham, New Brunswick, to the new pulp mill there, in 1895.

He was technical manager for the Whalan Pulp and Paper Mills at Woodfibre, B. C., from 1909 until 1919, when he retired and came to Vancouver to live. He continued his interest in the pulp and paper industry until the time of his death.

Mr. Moravec requested that money which might be spent on flowers be turned over instead to the Red Cross.

### E. L. Puffer

Elton L. Puffer died at his home in Dayton, Ohio, on June 30. Mr. Puffer was born in Brewer, Maine, where he spent his early years. He was graduated from the local high school and later from the University of Pennsylvania. Before joining the staff of the Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J., Mr. Puffer became a licensed embalmer and funeral director. He then became active in the paper business through his father, who had been identified with the Eastern Manufacturing Company for many years. Mr. Puffer joined the Heller & Merz Department of Calco Chemical Division in 1924 and has since become well known in the trade throughout Ohio and the South.

The official Masonic service was held by St. Andrew's Lodge F. & A. M., of which Mr. Puffer was a 32d degree member. The interment took place in Mount Hope Cemetery, Brewer, Maine.

He is survived by his wife, Ella D. Puffer, and one son, Elton L. Puffer, Jr., as well as by his parents.

### Mrs. John F. Yordy

Mrs. John F. Yordy, wife of John F. Yordy, superintendent of the Howard Paper Company, Urbana, Ohio, since the mills were started, died suddenly last week at her home in Urbana. The mills were closed to enable all employees to attend the funeral service.

### John E. O'Brien

John E. O'Brien who for the past 20 years, has been associate manager of the Paper Mill Supplies Department of Geo. W. Millar & Co., Inc., 284 Lafayette street, New York, died on July 17 at his home, 638 East 40th street, Brooklyn, N. Y. Funeral services were held from St. Theresa Church of Lisieux, Troy avenue and Avenue D, Brooklyn, N. Y.

### P. M. Wilson

P. M. Wilson, secretary-treasurer of the Marathon Paper Mills Company, Rothschild, Wis., died July 19. He was 57 years old and had been with the company since 1909, being the first employee after the organization of the company. Funeral services were held on Wednesday, July 22, at the Universalist Church, Wausau, Wis.

## OPA Sets Prices on Pulps

On April 4, 1942, the Eastern Corporation, Bangor, Maine, filed a protest against those portions of section 1347.232 of Maximum Price Regulation No. 114, which establish maximum prices for bleached and unbleached softwood sulphite woodpulp, as those grades are respectively defined in sections 1347.229 (a) (7), (8) and (9) of said Regulation.

The Office of Price Administration has ordered that protestant may sell any unbleached softwood sulphite woodpulp produced before June 15, 1942, at its mill at Orono, Maine, at prices not in excess of $72.50 per ton on dock Atlantic seaboard.

On April 21, 1942, the Dexter Sulphite Pulp and Paper Company of Dexter, N. Y., filed a protest against those provisions of section 1347.232 of Maximum Price Regulation No. 114—woodpulp, which establish maximum prices for bleached and unbleached Mitscherlich sulphite woodpulps.

The Office of Price Administration has ordered that the company may sell unbleached Mitscherlich at a price not in excess of $72.50 per ton f.o.b. mill and bleached Mitscherlich not in excess of $81.50 per ton f.o.b. mill.

# END BEARING MAINTENANCE TROUBLE

• MOST roller bearing complaints can be satisfied simply by advising the customer of the right lubricant to use, according to O.F. Packer, President of Stearns-Stafford, Inc., Lawton, Michigan. He says, "We have used Superla Grease No. 57 in all climates, from Alaska to Panama, for the last 18 years and are pleased to advise that we have never had a complaint."

Early in Stearns-Stafford's history, its executives realized that building quality into roller bearings wasn't enough. That quality had to be protected. They made a thorough search for a lubricant that would do this job best. Eighteen years without a complaint proves Superla Grease was a wise choice.

Have a Standard Lubrication Engineer put Superla Grease on bearings in some of your equipment. Watch for the saving you'll make in lubricant, and in maintenance and lubricating time.

Just write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois, for the Engineer nearest you.

**OIL IS AMMUNITION...USE IT WISELY**

Copr. 1942, Standard Oil Company

**ANDARD OIL COMPANY (INDIANA)**

LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRIC

# FINANCIAL NEWS

### New York Stock Exchange

High, Low and Last for Week Ending July 18, 1942

| STOCKS | High | Low | Last |
|---|---|---|---|
| A. P. W. | .... | .... | .... |
| Armstrong Cork Co. | 28¼ | 27 | 27¾ |
| Celotex Corp. | 7½ | 7⅛ | 7⅜ |
| Celotex Corp., pf. | 69 | 68 | 68½ |
| Certain-Teed Products Corp. | 2⅛ | 2 | 2⅛ |
| Certain-Teed Products Corp., pf. | 27⅜ | 25¾ | 26½ |
| Champion Paper & Fibre Co. | 15 | 15 | 15 |
| Champion Paper & Fibre Co., pf. | .... | .... | .... |
| Congoleum Nairn Co. | 15⅛ | 14½ | 14¾ |
| Container Corp. of America | 12⅜ | 12 | 12 |
| Continental-Diamond Fibre Co. | 7 | 6¾ | 6¾ |
| Crown-Zellerbach Co. | 10¾ | 10½ | 10½ |
| Crown-Zellerbach Co., pf. | 81 | 81 | 81 |
| Dixie-Vortex Co. | 8 | 7¾ | 7⅞ |
| Dixie-Vortex Co.—A. | 35 | 35 | 35 |
| Flintkote Co. | 11⅜ | 11 | 11⅛ |
| Robert Gair | 1¾ | 1⅝ | 1⅝ |
| Robert Gair, pf. | 10 | 10 | 10 |
| International Paper Co. | 10⅝ | 9¾ | 10 |
| International Paper Co., pf. | 51½ | 49½ | 49⅝ |
| Johns-Manville Corp. | 59 | 57 | 57⅞ |
| Johns-Manville Corp., pf. | .... | .... | .... |
| Kimberly Clark Corp. | 25¾ | 24½ | 24½ |
| MacAndrews & Forbes | 17 | 16⅝ | 16⅝ |
| MacAndrews & Forbes, pf. | 126 | 126 | 126 |
| Masonite Corp. | 26½ | 26½ | 26½ |
| Mead Corp. | 6⅜ | 6¼ | 6¼ |
| Mead Corp., pf. | 68 | 68 | 68 |
| Paraffine Companies, Inc. | 29½ | 29½ | 29½ |
| Paraffine Companies, Inc., pf. | .... | .... | .... |
| Rayonier, Inc. | 9½ | 9⅛ | 9⅜ |
| Rayonier, Inc., pf. | 24½ | 24⅛ | 24⅛ |
| Ruberoid Co. | 18⅛ | 17⅞ | 17⅞ |
| Scott Paper Co. | 33 | 31½ | 32¾ |
| Scott Paper Co., pf. | 108 | 108 | 108 |
| Sutherland Paper Co. | 22 | 21¼ | 22 |
| Union Bag & Paper Corp. | 8¾ | 8⅜ | 8⅝ |
| United Paperboard Co. | 3 | 3 | 3 |
| U. S. Gypsum Co. | 54 | 52 | 52 |
| U. S. Gypsum Co., pf. | 170 | 169¼ | 170 |
| West Virginia Pulp & Paper Co. | 13¼ | 12⅞ | 12⅞ |
| **BONDS** | | | |
| Abitibi Pulp & Paper Co. 5s '53 | .... | .... | .... |
| Celotex Corp. 4½s '47 | 98½ | 97¼ | 97¾ |
| Certain-Teed Products Corp. 5½s '48 | 89¼ | 87¼ | 89¼ |
| Champion Paper & Fibre Co. 4¾s '50 | 104¾ | 104¾ | 104¾ |
| Champion Paper & Fibre Co. 4¾s '50 | 103½ | 103½ | 103½ |
| International Paper Co. 6s '55 | 105 | 104¾ | 105 |
| International Paper Co. 5s '47 | 104¾ | 104½ | 104½ |
| Mead Corp. 4½s '55 | .... | .... | .... |
| West Virginia Pulp & Paper Co. 3s '54 | .... | .... | .... |

### New York Curb Exchange

High, Low and Last for Week Ending July 18, 1942

| STOCKS | High | Low | Last |
|---|---|---|---|
| American Box Board Co. | .... | .... | .... |
| Brown Co., pf. | .... | .... | .... |
| Great Northern Paper Co. | 28 | 27¼ | 28 |
| Hummel-Ross Fibre Corp. | 3⅛ | 3 | 3 |
| National Container Corp. | 8⅝ | 8⅛ | 8⅛ |
| St. Regis Paper Co. | 1⅝ | 1½ | 1½ |
| St. Regis Paper Co., pf. | .... | .... | .... |
| Taggart Corp. | 2⅞ | 2¾ | 2¾ |
| **BONDS** | | | |
| American Writing Paper Co. 6s '61 | 84⅝ | 84½ | 84½ |

## Arthur D. Kingsley Retires

LEE, Mass., July 16, 1942—Retirement of Arthur D. Kingsley as president of the Smith Paper, Inc., has been announced. His duties have been taken over by Walter F. Tatum, who will continue in the offices of vice-president and general manager. Mr. Tatum came to Smith Paper, Inc., and Lee a year ago.

## Masonite Votes Dividend

The Masonite Corporation has declared an extra dividend of 25 cents a share on the common stock in addition to the quarterly distribution of 25 cents, both payable September 10 to stockholders of record August 15. Previous payment was 25 cents a share, made June 10.

## Johns-Manville Earns $2.01

Reporting on results for the first half of 1942, Lewis H. Brown, president of the Johns-Manville Corporation, has informed stockholders that operations had continued at new high records. Sales of $48,754,848 were the highest for any six months in the history of the company and represented an increase of 25.6 per cent over the $38,812,510 for the same period of 1941.

Earnings before all taxes were $10,838,402, compared with $8,374,424 for the first six months of 1941. Provision for all types of taxes for this year's period amounted to $9,039,013, against $5,355,623 last year. Net earnings after taxes were $1,799,389, equal, after preferred dividends, to $2.01 a common share. On the same basis net earnings for the six-month period last year were $3,018,801, or $3.35 a common share.

## Kimberly-Clark Nets $1.52

The Kimberly-Clark Corporation reported yesterday for the six months to June 30, a net profit of $1,039,855, after taxes and charges, equivalent to $1.52 a share on the common stock. For the first six months of last year net income was $1,280,047, or $2.01 a common share.

For the quarter ended on June 30 net profit amounted to $484,358, equal to 69 cents a common share, against $800,389, or $1.33 a share, in the same period in 1941.

The report states that provision for Federal taxes takes into consideration probable increases under the anticipated tax law.

## Celotex Nets 69 Cents

The Celotex Corporation for the six months to April 30, reports consolidated net earnings, after taxes and all charges of $518,013, equal, after $72,-681 preferred stock dividend requirements, to 69 cents each on 638,410 common shares outstanding, according to Bror Dahlberg, president. This compares with $761,235, or $1.07 a share, for similar period of previous year. Earnings, before provision for income and excess-profits taxes, were $1,430,360, compared with $1,210,754.

## Mead Corp. Stock Listed

The New York Stock Exchange has authorized the listing of 8,000 additional shares of Mead Corporation $5.50 cumulative Series B preferred stock, no par value, with and without warrants attached; and 97,200 additional shares of common stock of the same corporation, no par value.

## Schumacher Makes Good Report

The Schumacher Wall Board Corporation reports for the year to April 30 net profit of $260,297, equal to $2.76 each on 66,000 common shares, against $283,285 or $3 a share in preceding fiscal year.

## Form Salvage Committee

Formation of the American Industries Salvage Committee, representing groups of leading industrial concerns who are working with the Conservation Division of the War Production Board to help speed the collection of vital scrap materials, has been announced by Robert W. Wolcott, chairman of the group and President of Lukens Steel Company.

Other members of the administrative committee directing the nationwide $2,000,000 campaign are: Charles R. Hook, president of the American Rolling Mill Company, vice chairman; R. S. Wilson, representing Rubber Manufacturers Association; and O. E. Mount, representing Steel Founders' Society.

The work of the committee, backing up a broad advertising program, will be two-fold; one, to reach every manufacturing and business firm in the nation to impress upon them the absolute necessity of getting their scrap on the way to the production line; and, two, to get business men cooperating with the local salvage committees of WPB already set up in 12,000 communities.

The activities of the committee will be closely coordinated with the present intensified scrap collection drive of the WPB, according to Mr. Wolcott. In this connection, the committee is underwriting the cost of an extensive national advertising campaign approved by the War Production Board, with a number of major industries underwriting the costs.

The advertising being carried on in newspapers, magazines, farm and trade papers and on the air, focuses the spotlight of public attention upon the need for salvage.

Supplementing contacts with industry already established by the Industrial Salvage Division of WPB, the American Industries Salvage Committee will make a direct approach to individual industrial concerns, working through industry chairmen who are now being appointed. Leaders in fifty industries are being asked to serve as chairmen for their respective trades in a broad effort to see that every company appoints a salvage manager with authority not only to clean out production scrap, but also to junk obsolescent equipment and similar material.

The great task faced by American industry in meeting the expanding war-production program, Mr. Wolcott said, makes it necessary for each company to intensify its scrap-collection efforts.

**In Glynn County,** Georgia, they load sawlogs by the "cross haul" method. Tops of sawlog trees and trees too small for sawlogs go to the pulp mills.

**Smallest paper machine in the State is the experimental Fourdrinier at the Herty Foundation Laboratory—trim 26 inches.**

**Your felt requirements whether narrow or wide will fulfill your specifications exactly—made by**

***Draper Brothers Co.***

*Draper Felts Favor Efficiency*

**DRAPER BROTHERS COMPANY**

*Woolen Manufacturers Since 1856* CANTON, MASS.

OUR REPRESENTATIVES *to serve you*

L. H. BREYFOGLE, Kalamazoo, Mich.
W. L. CAMPBELL, Savannah, Ga.
RALPH E. BRIGGS, Canton, Mass.
C. K. BEECHER, Delaware, Ohio
O. J. LELOFF, Vancouver, Wash.

# CONSTRUCTION NEWS

*Under limitations order L-41 all projects involving expenditures of more than $5,000 must be specifically approved by the War Productions Board. The status of projects reported herewith under the provisions of the order is not known.*—EDITOR.

**Philadelphia, Pa.**—Light Corrugated Box Company, Decatur and Tulip streets, manufacturer of corrugated boxes and containers, has approved plans for one-story addition to plant, to be used primarily for storage and distribution. General erection contract has been awarded to Philip Litman, 5331 Arlington street, Philadelphia, and work will be placed under way at once. I. W. Levin, 1431 Belmont avenut, Philadelphia, is architect.

**Shreveport, La.**—The Shreveport Waste Paper and Rag Company, 324 Fourth street, plans early rebuilding of portion of storage and distributing building, location noted, recently damaged by fire. Loss reported close to $12,000, with equipment.

**Indianapolis, Ind.**—The American Paper Stock Company, 320 West Michigan street, commercial paper products, is completing work on new one-story and basement building on West Michigan street, to be used for company headquarters in future, including storage and distribution facilities, and sales offices. As previously noted in these columns, it will be 80 x 135 feet, reported to cost in excess of $40,000, with equipment. Early occupancy is planned. Orville W. Wise, 2537 Burton street, is general contractor. D. A. Bohlen & Son, Majestic Building, Indianapolis, architects, prepared plans for structure.

**St. Louis, Mo.**—The Royal Wall Paper Company, Seventh street and Lucas avenue, manufacturer of wall paper stocks, has leased a one-story building on local site at 605-11 Franklin avenue, and will remodel and equip for expansion. Early occupancy is planned.

**Oswego, N. Y.**—Plans are under consideration by the Aluminum Company of America, Inc., Gulf Building, Pittsburgh, Pa., for taking over idle mill property of the St. Regis Paper Company at Oswego, with view to using site for a new aluminum plant. Test borings are being made of soil conditions and other investigations of property being carried out, with view to early decision. The mill has been inactive for a number of months past.

**Thorold, Ont.**—The Ontario Paper Company, Ltd., manufacturer of newsprint, mill wrappers, etc., has plans maturing for new addition to mill on Allanburg road.

**Cornwall, Ont.**—Courtaulds (Canada), Ltd., manufacturer of cellulose rayon products, has plans under way for addition to mill, to be equipped for increased production in processing and finishing divisions. Output will be used by Canadian Government, and Department of Munitions and Supply, Ottawa, Ont., will be active in project.

**Vancouver, B. C.**—The Pacific Coast Spar Company, Ltd., 610 Jervis street, Vancouver, has preliminary plans under way for a new pulp mill in vicinity of its timber properties, to be operated in conjunction with a saw and lumber mill. It is reported to cost over $175,000, including equipment. It is proposed to begin work in near future.

**Montreal, Que.**—The largest lumber season in history is now in progress in the Province of Quebec. About 25,000 lumberjacks, it is stated, are driving over 48,000,000 spruce and chuck pine logs along the St. Maurice River to pulp and paper mills throughout that area.

### New Companies, Etc.

**Newark, N. J.**—The Seeley Paper Converters Company, Inc., has been chartered with capital of 2500 shares of stock, no par value, to manufacture paper products. It is proposed to operate a local plant. New company is represented by Herbert M. Ellend, 605 Broad street, Newark, attorney.

**Miami, Fla.**—The Cellulose Fiber Company has been organized to manufacture wood fiber specialties. New company is headed by J. Mark Wilcox, Miami, principal incorporator.

**Windsor, Conn.**—The Taylor-Atkins Paper Mills, Inc., Windsor, has filed final notice of company dissolution under state laws.

## Experiments with Lower Grade Alum

The War Production Board has issued Order No. M-1-h prohibiting the use of bauxite containing less than 15% silica for the manufacture of sulphate of alumina (paper makers alum) after August 31, 1942. Experimental quantities of alum have been made from lower grade ore, and these have been tested in commercial runs of paper in several mills manufacturing bleached papers. These experimental lots contained about 10% less $Al_2O_3$ than does standard alum and approximately 10% insoluble matter. The insoluble content was colloidal in nature and practically all passed a 325 mesh screen. The quality of the paper in each case it was said, was fully up to the standards set with commercial alum: color, brightness and sizing being the same. The managements of the various mills cooperating in the development, all expressed the view that the change to the new type alum would inflict no hardship on them from a technical standpoint.

## Foxboro Gets Honor Flag

The Foxboro Company, of Foxboro, Mass., maker of measuring and controlling instruments for industrial processes, was awarded the Minute Man flag of the Treasury Department, on July 8, in recognition of payroll allotment subscriptions by over 95% of its employees. The coveted flag and accompanying certificate were presented by Alfred C. Sheehy, Deputy State Administrator of the War Savings Staff for Massachusetts and received by Irving W. Lane, second oldest employee of the Company. Arrangements were in charge of Corodon S. Fuller, an official of the company and chairman of the War Savings Committee for Foxboro. He was assisted by Alfred Herschel of the company's personnel department. The presentation followed a noon-hour concert by the Foxboro Company Brass Band.

## Zone Delivery Illegal

WASHINGTON, D. C., July 22, 1942 — Newspaper and magazine publishers, particularly those in Atlantic coast and Gulfport areas, were warned by Price Administrator Leon Henderson to resist the pressure from newsprint producers who are attempting to collect higher than ceiling prices through an illegal zone delivery scheme.

Maximum prices for newsprint, based on zones of delivery, were established by Maximum Price Regulation No. 130. Port prices for shipments to certain ports are fixed in the regulation on a basis somewhat lower than those established for shipments to surrounding zones.

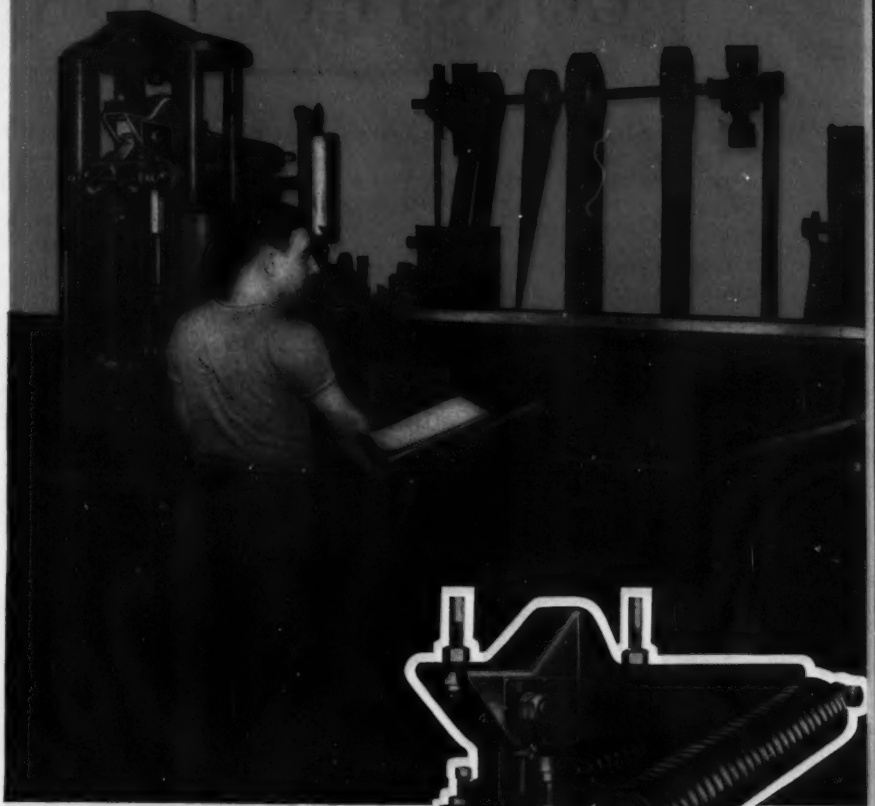
Under the delivery scheme reported in complaints to OPA, publishers who have been paying port prices are induced to accept newsprint deliveries in nearby, adjacent or surrounding zones and are charged the higher prices established by the regulation for these zones. In addition, the publisher must arrange and pay for the transportation of the shipment from the zone in which he takes delivery to the zone or port where his plant is located. This practice, in effect automatically punctures the price ceiling and constitutes an evasion and violation of the regulation by the producers as well as the purchasers.

"The applicable maximum price in the sale of newsprint is the price established for the zone in which the newsprint is to be used and to which it finally is delivered," Mr. Henderson stated. "Newsprint destined for use in seaports, where the port price is fixed by regulation, cannot be sold or purchased for more than the $50 per ton port price."

Publishers were requested to inform OPA of any cases where producers or sellers are attempting to resort to this practice. It was also pointed out that the purchase of newsprint is governed by the regulation and that publishers who pay more than the maximum prices established for the zones in which their plants are located and to which they make final delivery are also violating the provisions of the regulation.

At the same time it was pointed out that producers may seek adjustment of port prices if they petition OPA for relief in the manner set forth in the regulation and are prepared to prove that increases in production costs—as the result of wartime conditions such as the substitution of rail for water shipments—cause genuine hardship.


PRE-FITTED to Your Installation



Here's the "fitti room" for GE SPRING Hangers . a machine that dup cates actual-servi conditions!

GENSPRING
CONSTANT-SUPPORT HANGERS...
are individually calibrated for each job!

There's no chance of misfits in the hangers for your power piping . . . no delays for "fussy" calibrations, . . . when you specify GENSPRING Constant-Support Hangers!

Every GENSPRING unit is *prefitted* before shipment . . . tested and calibrated under load-and-travel conditions that duplicate actual-service specifications. Yet, field changes up to ±16% of rated hanger load may be made after installation with the simple adjustment built into each hanger.

These are only two of the advantages of "floating" pipe-suspension by GENSPRING Hangers. Through unique engineering design, these hangers provide constant support for piping in every "hot" and "cold" position. The weight of pipe is always balanced . . . transfer of vertical vibration to the pipe is eliminated . . . the safety factor of the complete system is effectively maintained. And *all* in minimum headroom!

Get full details of GENSPRING Constant-Support Hangers for loads from 250 to 8500 pounds. Costs are moderate due to mass production and interchangeable parts. Grinnell Co., Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities of United States and Canada.

WRITE FOR complete Data Book on GENSPRING Hangers containing piping-travel calculations.

GENSPRING CONSTANT-SUPPORT HANGERS BY

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WHENEVER PIPING IS INVOLVED

# PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 115 July 23, 1942 No. 4


## COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Statler Hotel, Boston, Mass., September 29-October 1.

## WAR BONDS

The war program should have the full support of every business concern and citizen. Points of difference must inevitably arise in the methods employed in the conduct of the Administration's program. Honest criticism, however, on any national policy or subject is an integral part of a democracy and it is the constitutional right of a citizen to express his divergent opinion; always, of course in a proper manner. But whatever the individual political affiliation may be, and however unsatisfactory the policy of economic and other governmental affairs may be considered to be, every citizen has a definite responsibility and duty to perform. That duty lies in giving united support to the Administration in its efforts to establish as equitable a peace as it may be possible to achieve in the present oppressed and chaotic world. That duty may be well rendered by individuals and business concerns in the purchase of war bonds.

Urging the purchase of War Bonds of the series F and G types as an excellent means for the investment of reserve funds for the industry's post-war reconversion costs, Henry H. Heimann points out in the monthly Business Review of the National Association of Credit Men, issued July 15, that, "these bonds likewise provide one of the very best investments that corporations can make if they must build reserves to meet maturing issues of an extended nature. Corporate reserves in the form of War Bonds serve a three-fold purpose. First, they help provide the government with funds to pay for the materials necessary to win this war. Second, they contribute toward the anti-inflationary program and thus add to the possibility of a more stable future for all business. Third, they represent a security that not only yields a satisfactory rate of interest and cannot depreciate in price, but also has the backing of the United States of America."

In contrast to the series E Bonds, which are available only to individuals, Mr. Heimann emphasizes that "the series F Bonds have a 12 years appreciation period and are issued at 74% of maturity value, with an investment yield of approximately 2½%, while the series G Bonds are 12-year current income bonds issued at par and bearing interest at the rate of 2½% annually. It is the series F and G Bonds that are so well adapted for investment of corporate reserves, since the maximum holding can be as high as $100,000 annually for the aggregate of the two series. Either of these series can be registered in the name of the corporation, which is not the case with series E Bonds. Thus post-war reconversion costs can be anticipated and funds to meet them can be invested safely."

Discussing post-war aid for business and individuals, Mr. Heimann says that, "If the proposed post-war tax credit program is finally adopted it will, of course, provide greatest benefits for those firms whose vulnerability to the 94% excess profits tax is greatest. Rebate of excess profits taxes over 80% currently appears to be favored in Congress. This rebate is a sound measure. While the 94% rate on excess profits will drain off almost entirely present earnings, and thereby provide added sums for current Treasury financing, the possibility of a rebate after the war of a fixed percentage will supply additional stimulus for holding down costs and thus aid in reducing the financial burden of the war."

In developing the current tax bill, however, Congress might well, Mr. Heimann states, also enact proposals that corporations and individuals investing in War Bonds should be granted tax credit for at least a portion of the amount of the non-negotiable, non-interest-bearing bonds they purchase. Business concerns, he adds, should likewise be granted permission to build reserves against post-war losses from price-inflated inventories. "These are two instances of the consideration that must be given," Mr. Heimann declares, "to policies that will help conserve the great industrial establishment that we have built and upon which we rely not only for victory but also for rehabilitation and future prosperity."

Commenting further on the subject, Mr. Heimann states that, "In developing such a program, we must never be unconscious of the human side of rehabilitation. It is well to note, in this connection, that there has been some recent consideration by Congress regarding continuance of the pay of men in the armed forces for as long as a year after the war is over. Broader provisions regarding service men's debts and obligations are also in the process of being enacted. In analyzing these proposals we should

have in mind that if this is not done, we may well be faced with the post-war reestablishment of the relief programs of the depression years. Continuing payment of wages to service men for a year after their return would make possible better reorientation on the part of the individual. As an item in the huge cost of this war this would be relatively small. As a contribution to the maintenance of our social structure the benefits could be great."

## New Date for Chemical Show

Announcement is made by the Chicago Section of the American Chemical Society of a change in dates and location for its second National Chemical Exposition, owing to the acquisition of the Stevens Hotel in Chicago by the United States Army.

The exposition and conference have been transferred to the Sherman Hotel, conveniently located in Chicago's business center at Clark and Randolph Streets, and will take place from November 24 to 29 instead of a week earlier as originally planned.

"Adequate space will be available for a show about twice as large as the first exposition sponsored by the Chicago Section in 1940 and under most advantageous conditions," said Victor Conquest, chairman of the show committee.

Mr. Conquest points out that the importance of the show cannot be underestimated. The chemical industry is vital in the war effort. Many new processes and discoveries will be revealed. The exposition will offer the opportunity to exchange ideas and to view latest developments in an industry which has contracts for construction projects totaling $72,118,000 this year as compared with $46,996,000 a year ago.

## Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

| Current Weeks—1942 | | Corresponding Weeks—1941 | |
|---|---|---|---|
| June 6 | 90.2 | June 7 | 96.8 |
| June 13 | 88.2 | June 14 | 99.0 |
| June 20 | 86.9 | June 21 | 99.9 |
| June 27 | 84.9 | June 28 | 101.5 |
| July 4..(Holiday Week) | 71.4 | July 5 | 72.8 |
| July 11.....(Preliminary) | 67.2 | July 12 | 95.2 |

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|
| 1941 | 85.6 | 89.7 | 92.2 | 96.0 | 98.7 | 99.3 | 94.2 |
| 1942 | 104.5 | 103.9 | 102.9 | 100.3 | 95.4 | 87.3 | .... |

| Year | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|
| 1941 | 101.0 | 99.7 | 105.2 | 106.2 | 100.4 | 97.4 |
| 1942 | .... | .... | .... | .... | .... | .... |

COMPARATIVE YEARLY SUMMARIES

| | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 |
|---|---|---|---|---|---|---|---|---|
| Year to Date.. | 68.1 | 77.6 | 88.1 | 67.1 | 78.6 | 86.6 | 92.8 | 96.9 |
| Year Average.. | 69.9 | 80.4 | 79.8 | 71.5 | 83.4 | 85.6 | 97.4 | ... |

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1937 | 83 | 89 | 89 | 91 | 88 | 80 | 69 | 77 | 72 | 70 | 57 | 47 | 75 |
| 1938 | 56 | 63 | 63 | 60 | 60 | 59 | 59 | 69 | 70 | 73 | 67 | 61 | 64 |
| 1939 | 65 | 73 | 76 | 74 | 69 | 73 | 68 | 77 | 82 | 91 | 88 | 77 | 77 |
| 1940 | 78 | 75 | 74 | 76 | 82 | 85 | 77 | 79 | 78 | 85 | 82 | 77 | 78 |
| 1941 | 81 | 88 | 89 | 89 | 91 | 94 | 92 | 98 | 95 | 99 | 98 | 90 | 92 |
| 1942 | 102 | 101 | 101 | 93 | 82 | 69 | .. | .. | .. | .. | .. | .. | .. |

Week ending June 6, 1942—69
Week ending June 13, 1942—72
Week ending June 20, 1942—69
Week ending June 27, 1942—72
Week ending July 4, 1942—59
Week ending July 11, 1942—52

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.


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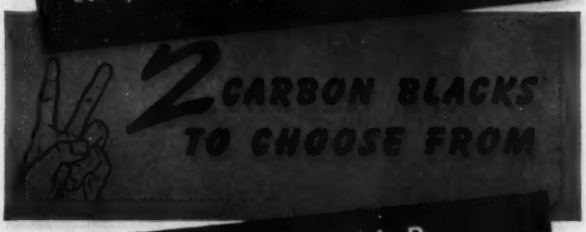
Continental Uncompressed Black meets the most stringent requirements for ease of dispersion and intensity of coloring. Accepted throughout the paper industry, you can depend upon it to be of the highest quality—and consistently uniform.

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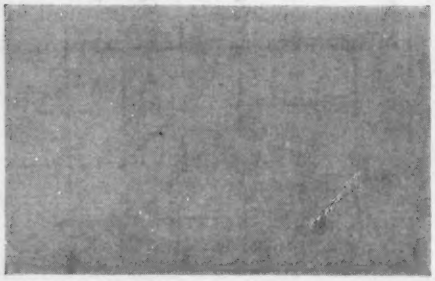
# Du Pont LIGNASAN

REG. U. S. PAT. OFF.

## FOR SLIME CONTROL AND PULP PRESERVATION

*Economical • Effective*
*Easy to Apply*

**PHOTOGRAPHIC PROOF**
*of Lignasan's effectiveness*



**BALED LAP STOCK, TREATED WITH LIGNASAN** (*after 10 months' storage—application rate—4 ounces of "Lignasan" per ton, dry basis*)

**STOCK, UNTREATED CHECK BALES** (*after 10 months' storage under same conditions as above*)

HERE'S a dependable and economical fungicide for slime control and pulp preservation —tested and found effective in plant-scale operations for nearly two years. It's economical and requires no expensive control equipment for application in white water system, knotter screens or riffers, in the beaters or paper machine head box.

"Lignasan" is one of the most powerful fungicides and bactericides known, which makes it highly effective in low concentrations. It is easy to handle and apply and can be prepared as a concentrated stock solution or a paste so that the proper dosage can be quickly and accurately measured. Write for complete details on specific applications. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington, Delaware.

DU PONT

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LIGNASAN

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BACTERICIDE AND FUNGICIDE

### Slime control

Slime occuring in the white water system of pulp mills usually can be controlled by bleeding "Lignasan" solution into the system near the point where slime formation is heaviest. Good results are being obtained by adding "Lignasan" solution at the knotter screens or rifflers.

To control slime from the beaters to the paper machine, the usual method is to apply "Lignasan" in the beaters; only 2 ounces to 4 ounces per ton generally is ample. If slime develops only on the paper machine, it may be preferable to bleed the "Lignasan" solution into the machine head box.

### Pulp preservation during storage or transit

Effective control of fungi in laps or pulp stock may be obtained with 4 ounces to 8 ounces of "Lignasan" per ton of fibre, dry basis, according to tests conducted during the past five years in both this country and Sweden.

Expensive equipment is not required for treating laps on the wet machine—generally a simple perforated pipe applicator, with a control valve in the pipeline, is sufficient.

To protect slush pulp against deterioration by bacteria during storage or transit, mix 4 ounces to 8 ounces of "Lignasan" into the stock per ton of fibre.

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

# United States Patents on Papermaking

## Second Quarter, 1942

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Because, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete; it is also possible that some patents have been included which do not apply to pulp and paper manufacture.

Copies of any of the following patents may be obtained from the U. S. Patent Office, Washington, D. C., by sending ten cents for each patent desired. The number, name of the inventor and the title of the patent should be given in the request. Personal checks or postage stamps are not accepted. Books of coupons may be purchased for two or ten dollars, good for 20 or 100 patents. Coupon orders do not have to be accompanied by letters of transmittal.

### April 7, 1942

2,278,477. Corrugating apparatus. Stone Nyberg, assignor to Agnes J. Reeves Greer, Morgantown, W. Va. Filed Sept. 28, 1940. 3 claims. (Cl. 153-68).

2,278,525. Conveyor and coucher belt process and machine for thickening pulp. John P. Rich and Elmer R. Burling, assignors to Improved Paper Machinery Corporation, Nashua, N. H. Filed April 17, 1939. 8 claims. (Cl. 210-199). A container for a pulp suspension, a filter drum to collect a mat of semisolid material, and an impervious belt stretched between rolls adapted to contact the pulp mass on the surface of the drum.

2,278,526. Method of and apparatus for couching. John P. Rich, assignor to Improved Paper Machinery Corporation, Nashua, N. H. Filed April 17, 1939. 4 claims. (Cl. 210-199). A filter drum and a couch roll, with motors for driving each.

2,278,563. Coating machine for coating sheets of material. William Recht, assignor to General Printing Ink Corporation, New York, N. Y. Filed June 30, 1937. 3 claims. (Cl. 91-48).

2,278,673. Adhesive coated sheet material. Martin Savada and William Horowitz, New York, N. Y. Filed March 13, 1940. 1 claim. (Cl. 154-43). A facing strip or web has a coating of pressure-sensitive adhesive and a backing strip of woven sheet material.

2,278,674. Processing of tall oil. Ernest Segessemann, assignor to National Oil Products Company, Harrison, N. J. Filed Nov. 9, 1939. 15 claims. (Cl. 260-97.5). The fatty and resin acids are esterified with a relatively high-boiling alcohol, the fatty acids are transesterified with an alcobol having a lower boiling point than the first alcohol, and the fatty acids are separated by distillation.

2,278,729. Apparatus for screening pulp. Albert D. Merrill, Watertown, N. Y. Filed Dec. 2, 1937. 1 claim. (Cl. 92-32). A container having a screen mounted at the upper part and a resilient diaphragm at the base, outlets located near the screen and the diaphragm with control valves and means for effecting a controlled flow of screened pulp through each outlet.

2,279,256. Adhesive composition. Jacob G. Mark, assignor to Dewey and Almy Chemical Company, North Cambridge, Mass. Filed Oct. 27, 1938. 6 claims. (Cl. 260-744). A water-resistant adhesive film is formed from 10 parts rubber and 160 parts of a resin (rosin, copal, manila, senegal) dissolved in an alkaline aqueous solution of approximately 6 parts of a second resin of lower acid number than the first and 10-30 parts of casein.

2,279,279. Plain or satchel bag-making machine. Gordon William French, assignor to Beasley, French and Company Limited, Bristol, England. Filed Aug. 19, 1939. 1 claim. (Cl. 93-20).

2,279,289. Conical container and method of making same. John Ernest Page, assignor to Gibson Patent Containers, Ltd., Sydney, New South Wales, Australia. Filed Feb. 13, 1939. 10 claims. (Cl. 93-36.1).

### April 14, 1942

2,279,359. Skived container construction and method of making the same. Harry F. Waters, New York, N. Y. Filed July 12, 1941. 9 claims. (Cl. 93-36.01). Fluid-tight containers.

2,279,361. Electrostatic coating process. John O. Amstuz, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Feb. 19, 1938. 5 claims. (Cl. 91-68). Method of coating with comminuted material such as flock.

2,279,382. Shingle and method of making the same. George E. Swenson, assignor to The Celotex Corporation, Chicago, Ill. Filed June 20, 1938. 5 claims. (Cl. 108-8). Method of saturating with asphalt.

2,279,486. Segmental abrasive wheel for pulp grinding. Leon A. Patt, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Dec. 14, 1939. 7 claims. (Cl. 51-207).

2,279,534. Method and machine for making and collapsing paper boxes. Melvin H. Sidebotham, West Newton, Mass., and Ross A. Himes, Emeryville, Calif. Filed Nov. 27, 1940. 7 claims. (Cl. 93-49).

2,279,549. Process of treating a fibrous web. John M. Behnke, assignor to Weycraft Paper Corporation, New York, N. Y. Filed Jan. 17, 1940. 16 claims. (Cl. 91-68). Paper is passed through aqueous glue, dried, impregnated with aqueous glue-glycerin containing a water-insoluble metallic oxide in suspension, and finally treating with formaldehyde.

2,279,553. Method and apparatus for applying coatings to webs. Rexford H. Bradt, assignor to Fox River Paper Corporation, Appleton, Wis. Filed July 1, 1939. 10 claims. (Cl. 91-33). A method of coating in a partial vacuum.

2,279,604. Process for producing copying paper. Rudolf Wälti, Basel, Switzerland. Filed Sept. 7, 1937. 1 claim. (Cl. 91-68). One side of the paper is coated with latex and the other with latex and a coloring substance free from a precipitating action upon the latex.

2,279,788. Mold inhibitive cellulosic structure. Walter John Jebens, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Feb. 21, 1939. 16 claims. (Cl. 91-68). A moisture-proofing composition consists of cellulose substitution derivative film forming agent-wax and a resin film forming agent-wax and a mold-inhibiting agent, alkyl thiuram sulfide.

2,279,842. Method of making packages. Elmer Lovell Smith and Frrncis Ross Clark, assignors to Package Machinery Company, Springfield, Mass. Filed Nov. 18, 1938. 3 claims. (Cl. 93-6). Method of forming a sealed end on an article wrapped circumferentially.

2,279,988. Paper. Worthie W. Haynes, South Bend, Ind. Filed June 19, 1939. 2 claims. (Cl. 250-71). Paper is impregnated with a luminous sulphide, the sheet being translucent and having the property of being luminous.

### April 21, 1942

2,280,092. Machine and method of forming folded toilet seat covers. Charles E. Kirch, Charles G. MacLelland, and Frank M. Becker, assignors to Kirch-Trumbull Corporation, Alden, N. Y. Filed Sept. 15, 1939. 17 claims. (Cl. 93-1).

2,280,208. Press roll. Robert J. Wilkie, assignor to Stowe-Woodward, Inc., Newton Upper Falls, Mass. Filed Aug. 24, 1938. 2 claims. (Cl. 92-49). A press roll comprises a rubber binder having pieces of rock intermingled therewith and forming a portion of the active surface of the roll, the end portions being of the same diameter as the intervening portion and being free of rock at the surface.

2,280,216. Method of impregnating fibrous materials. William Boyd Campbell, Otto Maas, and Ernest Edward Massey, assignors to Imperial Tobacco Company of Canada, Limited, Montreal, Quebec, Canada. Filed May 5, 1939. 4 claims. (Cl. 91-70). A method of impregnating paper in rolls with a solution of waxes in carbon tetrachloride by successive soakings and removal of the solvent by heat and suction.

2,280,247. Waxlike product and method of making the same from tall oil or rosin and fatty acids. Ralph H. McKee, New York, N. Y., and Helmer L. Blengsli, Old Greenwich, Conn. Filed Feb. 25, 1939. 7 claims. (Cl. 260-97.5). Tall oil is heated with an acid catalyst (mineral of sulfonic acids or their acid salts) at a temperature within the distillation range of the oil and removing the unchanged organic acids by distillation, whereby a wax is produced.

2,280,249. Method of forming laminated product. Paul Edwin Meyer, assignor to Certain-teed Products Corporation, New York, N. Y. Filed Dec. 17, 1937. 2 claims. (Cl. 154-2). Method of producing a cylindrical product from sheet material.

2,280,259. Production of articles with viscous coatings. Robert W. Polley, assignor to Nashua Gummed and Coated Paper Company, Nashua, N. H. Filed July 24, 1940. 3 claims. (Cl. 164-17). Method of cutting articles from blanks having rubber latex coatings.

2,280,307. Process of manufacturing paper. Robert A. Diehm, assignor to Röhm & Haas Company, Philadelphia, Pa. Filed Nov. 25, 1938. 2 claims. (Cl. 195-8). Straw, kraft, mechanical or sulfite pulp in aqueous suspension is treated with a cytase at pH 4.5 to 5.5 and a temperature of 40-45° until the desired amount of hemicellulose has been solubilized in the pulp and is washed.

2,280,477. Rotproofing of textiles, paper, and other fibrous materials. William James Carter, assignor to National Processes Limited, London, England. Filed Oct. 20, 1937. 4 claims. (Cl. 106-16). A normally water-insoluble compound of naphthenic acid is dispersed in an aqueous vehicle by means of an alkali.

2,280,600. Mass capable of swelling and thickening agents. Richard Müller and Harry Lee, assignors to Chemische Fabrik von Heyden A. G., Radebuel, near Dresden, Germany. Filed April 21, 1938. 14 claims. (Cl. 260-124). The precipitation product from concentrated sulphite waste liquors with hydrochloric or sulphuric acid is insoluble in water and possesses a limited and reversible swelling capacity.

2,280,632. Consistency regulator. Hervey G. Cram, assignor to P. D. Cram, Appleton, Wis. Filed May 28, 1938. 4 claims. (Cl. 265-11).

2,280,699. Method of laminating and adhesive. Francis Ralph Grant and Carl E. Wright, assignors to Lion Oil Refining Company, El Dorado, Ark. Filed Oct. 2, 1939. 17 claims. (Cl. 154-40). A plurality of laminated layers, at least two of which are joined by a bituminous layer, are bonded with a water-containing adhesive of the starchy type, in-

cluding not substantially less than 1 per cent of water-insoluble metallic soap.

APRIL 28, 1942

2,280,773. Carton opening, folding, and positioning machine. John Lee Ferguson, assignor to J. L. Ferguson Company, Joliet, Ill. Filed Aug. 3, 1940. 31 claims. (Cl. 93-53).

2,280,819. Multiply paper bag. William J. Geimer, assignor to Bemis Bro. Bag Co., Minneapolis, Minn. Filed March 13, 1939. 1 claim. (Cl. 229-55).

2,280,829. Coated cellulosic film. Walter John Jebens, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Sept. 1, 1939. 6 calims. (Cl. 91-70). Regenerated cellulose sheets are coated with a methylol urea ether, polymerizing the coated material, and moistureproofing the sheets.

2,280,842. Method of isolating fatty acids from tall oil. Anthony F. Oliver and Robert C. Palmer, assignors to Newport Industries, Inc., Pensacola, Fla. Filed Nov. 15, 1939. 12 claims. (Cl. 260-97.5). Stearic acid is prepared from tall oil by desulfurizing the oil, hydrogenating the oil and separating the acid.

2,280,843. Method of concentrating the sterol content of tall oil. Anthony F. Oliver and Robert C. Palmer, assignors to Newport Industries, Inc., Pensacola, Fla. Filed Sept. 30, 1940. 12 claims. (Cl. 260-97.5). A solution of tall oil in a liquid hydrocarbon is filtered through a mass of absorbent medium and the mass is washed with an organic fraction to give a product rich in sterols.

2,280,852. Coated abrasive article. Norman P. Robie, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Feb. 24, 1938. 7 claims. (Cl. 51-303). The abrasive grain is secured to the backing by an adhesive comprising a stable cellulose ester of a carboxylic acid soluble in a nonacid aqueous medium.

2,280,861. Coating composition and method of making same. William H. Smyers, assignor to Standard Oil Development Company, Linden, N. J. Filed Dec. 30, 1933. 11 claims. (Cl. 260-757). A uniformly homogeneous mixture of wax and rubber; the jelly-wax mass is smoothly spreadable on the surface of a fibrous sheet material without substantial penetration.

2,280,938. Preparation of chlorine dioxide, $ClO_2$. George Paul Vincent, assignor to The Mathieson Alkali Works, Inc., New York, N. Y. Filed Oct. 24, 1939. 21 claims. (Cl. 23-152). A mixture of chlorine dioxide and chlorine may be prepared from a solution of calcium chlorate and calcium chloride with sulfuric acid.

2,280,947. Consistency regulator. Finn H. Gulliksen, assignor to Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Filed May 6, 1938. 5 claims. (Cl. 265-11).

2,281,013. Electrolytic recording paper. Paul Talmey, assignor to Radio Inventions, Inc., New York, N. Y. Filed Feb. 25, 1939. 2 claims. (Cl. 204-2). The paper has a coating of an electrolytically sensitive composition consisting of a compound of the class of antimony trioxide, oxysulphate, pentasulphide or bismuth salts, a buffer such as gallic, salicylic, benzoic, citric, boric or phosphoric acid, and an electrolyte to make the material conducting in water.

2,281,027. Process for manufacturing laminated articles. Brook J. Dennison, assignor to Pittsburgh Plate Glass Company, Allegheny County, Pa. Filed July 31, 1940. 5 claims. (Cl. 154-2).

2,281,089. Envelope machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed April 17, 1940. 25 claims. (Cl. 93-62).

2,281,293. Apparatus for delivering paper stock to paper making machines. Richard T. Lang, assignor to American Voith Contact Co., Inc., New York, N. Y. Filed Dec. 15, 1937. 5 claims. (Cl. 92-44). A stock delivery nozzle is connected with a container, the lower portion of which has a curved wall.

2,281,294. Press for paper making machines. Bernard Abbott Malkin, assignor to Dominion Engineering Works Limited, Lachine, Quebec, Canada. Filed June 20, 1940. 4 claims. (Cl. 92-49). A top press roll and two bottom press rolls arranged in a triangular formation, with means for applying pressure.

2,281,340. Paper coating device. William F. Thiele and Howard B. Richmond, assignors to Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. Filed Sept. 8, 1939. 3 claims. (Cl. 91-55). A method of coating paper as it comes from the driers.

2,281,483. Process of preparing laminated material. Donald Edwards Edgar, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed May 1, 1940. 14 claims. (Cl. 154-2). One of sheets has as the adhesive a cellulose derivative and 0.6 to 5 parts of a synthetic resin compatible therewith for each part of cellulose derivative.

2,281,496. Air drier for paper. Hugo H. Hanson, assignor to W. C. Hamilton Sons, Miquon, Pa. Filed April 29, 1940. 5 claims. (Cl. 34-155). Method for driving air through a pair of air heaters directly into contact with the opposite faces of a moving web of paper.

2,281,504. Process for the extraction of cellulose fibers from lignified fibrous material. Walter Talbot Kerr, assignor to Sisal Pulp Syndicate Limited, London, England. Filed March 24, 1939. 4 claims. (Cl. 92-9). The material is first subjected to treatment with a weak alkaline solution (alkali hydroxide or carbonate) at below its boiling poirt at atmospheric pressure, then to a weak nonacid aqueous solution of chlorine, and finally to a second alkaline treatment, washed and the undissolved impurities mechanically separated.

MAY 5, 1942

2,281,558. Manufacture of abrasive articles and apparatus therefor. Bert S. Cross, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed March 6, 1933. 11 claims. (Cl. 91-68). An adhesive is added to solid particles dispersed and deposited on a surface by the action of an electrical field.

2,281,589. Moistureproof wrapping material. James A. Mitchell, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed June 8, 1940. 9 claims. (Cl. 91-68). A regenerated cellulose base sheet has a moistureproof coating attached thereto with a layer of ethenone material of the formula $H_2CRCOCZ$:-CO, in which R and Z are aliphatic groups.

2,281,724. Saturating machine. Gilbert J. Snyder, assignor to Mastic Asphalt Corporation, South Bend, Ind. Filed March 8, 1939. 26 claims. (Cl. 91-46). A composition of a preheating chamber, a drying chamber and a dipping tank.

2,281,749. Paper stock machine. Maxine Chevrier, Harrisville, N. Y. Filed May 25, 1940. 2 claims. (Cl. 137-78), A mixing chamber with agitator blades.

2,281,854. Method and apparatus for packaging asphalt and container therefor. James Miller, Jr., Chicago, Ill., assignor to Trumbull Asphalt Company. Filed Aug. 2, 1940. 5 claims. (Cl. 93-39.1). Apparatus for manufacturing cylindrical containers for asphalt.

2,281,940. Coating composition. Robert R. Lewis, assignor to Vulcan Proofing Company, Brooklyn, N. Y. Filed Feb. 17, 1938. 1 claim. (Cl. 260-17), A coating composition consists of 100 parts of polymerized isobutylene, 1 part of stearic acid, 10 parts of ethylcellulose, 20 parts of paraffin wax, and a pigment.

2,281,945. Paper napkin. Alma D. Milliken, Rye, N. Y. Filed July 9, 1938. 6 claims. (Cl. 92-68). A tissue having an irregular wiping surface containing a large number of small wiping elements which are loose and resilient; this tissue accomodates itself to irregularities in the skin and the pores to remove cream or other material.

2,281,964. Method and apparatus for making paper bags. Howard A. Wolf, assignor to Wolf Brothers, Philadelphia, Pa. Filed May 1, 1941. 2 claims. (Cl. 93-18).

2,281,965. Receiving roll adiusting means for web winding machines. William H. Wylie, assignor to Vac-Control Manufacturing Company, Inc., Oklahoma City, Okla. Filed Feb. 28, 1941. 7 claims. (Cl. 242-76).

2,282,070. Apparatus for drying paper and paper pulp samples. Everett A. Mahannah, assignor to International Paper Company, New York, N. Y. Filed Aug. 2, 1940. 4 claims. (Cl. 34-150). An oven for drying articles of sheet material.

2,282,112. Method for making the contaminated water from alkaline pulp mills harmless. Hilding Olof Vidar Bergström and Karl Gustav Trobeck, Stockholm, Sweden. Filed Feb. 17, 1940. 3 claims. (Cl. 210-2). Gases are intimately mixed with the waste water in a tower, and the volatile materials in the water are removed with the gases; foaming may be reduced by the addition of a suitable alkaline earth metal hydroxide or carbonate.

2,282,278. Package conveying, closing and sealing machines. James R. Wysong, assignor to Larus Brothers Co., Inc., Richmond, Va. Filed Dec. 13, 1938. 5 claims. (Cl. 93-6).

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2,282,318. Fiber can treating machine. Llewellyn Biggs, assignor to American Can Company, New York, N. Y. Filed Nov. 20, 1940. 6 claims. (Cl. 93-36).

2,282,364. Starch adhesive composition. Walter G. Kunze and Raymond B. Evans, assignors to Le Page's Inc., Gloucester, Mass. Filed Oct. 23, 1940. 9 claims. (Cl. 106-210). An adhesive composition comprises starch and dicyanodiamide.

2,282,375. Wax sealing composition. Frederick Warde Padgett, assignor to Moore & Munger, Plainfield, N. J. Filed Oct. 27, 1939. 5 claims. (Cl. 106-270). A composition useful in making waxed paper consists of a major proportion of petroleum wax and a minor proportion of a fusible polar wax-like substance selected from the group consisting of montan wax, montanic acid, carnauba wax and candelilla wax (the latter being 0.1 to 2 per cent of the petroleum wax); this is self-sealing when heated and subsequently cooled.

2,282,479. Roofing granule and the like. Robert T. Johnson, assignor to Bakelite Corporation, New York, N. Y. Filed Sept. 23, 1936. 2 claims. (Cl. 91-70). A roofing base is coated with bitumen and treated with granules coated with an oil-resin composition (drying oil-phenolic resin, fatty acid modified alkyd esters, and their mixtures.

2,282,518. Preparation of phenol-lignin-aldehyde resins. Carroll A. Hochwalt and Mark Plunguian, assignors to The Mead Corporation, Chillichothe, Ohio. Filed June 3, 1939. 3 claims. (Cl. 260-53). Lignin solids from black liquor are heated with a phenol and an aldehyde to produce a potentially reactive thermosetting resinous material.

2,282,701. Process of waterproofing. Louis H. Bock and Herman A. Bruson, assignors to Röhm & Haas Company, Philadelphia, Pa. Filed Dec. 8, 1938. 2 claims. (Cl. 8-116). The material is impregnated with 5-10 per cent of a condensation product of a fatty acid amide of at least 12 carbon atoms, formaldehyde and a strongly basis, nonaromatic secondary amine of not more than 7 carbon atoms, a basic catalyst, and 0.25-1 per cent of urea and heated at 120-150 deg. C.

2,282,887. Wood grinding machine. Frederick W. Roberts, Lockport, N. Y. Filed Dec. 30, 1938. 25 claims. (Cl. 83-75). A method of grinding wood which includes varying both the area of that portion of the surface of the stone on which the wood is pressed, and the pressure with which the wood is pressed against the stone, in such a manner that when the pressure is increased, the area is decreased, and when the pressure the area is increased, to place the desired load on the grindstone.

2,282,897. Apparatus for coating containers. Ira J. Snader and James F. Earp, Jr., assignors to The American Paper Bottle Company, Toledo, Ohio. Filed Oct. 30, 1937. 9 claims. (Cl. 91-55).

2,282,898. Method of coating containers. Ira J. Snader and James F. Earp, Jr., assignors to The American Paper Bottle Company, Toledo, Ohio. Filed April 1, 1939. 9 claims. (Cl. 117-95).

2,282,899. Apparatus for cooling freshly coated articles. Ira J. Snader and James F. Earp, Jr., assignor to The American Paper Bottle Company, Toledo, Ohio. Filed Dec. 8, 1939. 5 claims. (Cl. 62-102).

2,282,909. Slitting and rewinding mechanism. Arthur R. Thiersch and Arthur C. Wirth, assignors to Carton Finishers, Inc., Chicago, Ill. Filed April 23, 1941. 2 claims. (Cl. 164-61).

2,283,044. Stabilization of starchy paste. George V. Caesar, assignor to Stein, Hall & Company, Inc., New York, N. Y. Filed Sept. 8, 1939. 3 claims. (Cl. 106-213). Starch is gelatinized in the presence of 0.25-2 per cent of an alkali metal salt at an elevated temperature and treated with 0.5-1 per cent of a sulfate higher fatty alcohol to inhibit gelation of the dispersion when it cools to room temperature.

2,283,067. Process for refining sulphate wood turpentine. William H. Jennings, Portsmouth, Va. Filed Nov. 2, 1939. 4 claims. (Cl. 202-57). The turpentine containing sulphur compounds is heated with an aqueous solution of caustic soda and lime, the aqueous solution is separated, and the turpentine steam distilled.

2,283,137. Method and apparatus for making absorbent pads. Harry A. Fine, assignor to I. B. Kleinert Rubber Company, New York, N. Y. Filed Oct. 15, 1938. 12 claims. (Cl. 154-29).

2,283,155. Apparatus for regulating and delivering paper stock to papermaking machines. Richard T. Lang, assignor to J. M. Voith, Heidenheim on the Brenz, Germany. Filed Dec. 15, 1938. 2 claims. (Cl. 92-46).

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2,283,159. Paper board folding machine and method. Edwin L. Arneson, assignor to Morris Paper Mills, Chicago, Ill. Filed April 2, 1940. 8 claims. (Cl. 270-80).

2,283,228. Process and apparatus for burning sulphur. Albert Regenbrecht, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Dec. 23, 1939. 9 claims. (Cl. 23-179).

2,283,458. Process for making resinous condensation products. Max Phillips, Washington, D. C., dedicated to the free use of the People of the United States of America. Filed Jan. 10, 1940. 4 claims. (Cl. 260-10). Hemicelluloses and a phenol are heated in the presence of a catalyst.

2,283,558. Electrically conductive paper and method of producing the same. Bernard L. Klinw, assignor to The Western Union Telegraph Company, New York, N. Y. Filed June 18, 1937. 17 claims. (Cl. 204-2). A sheet of paper having a solid solution of an electrolyte dissolved in a solid oxygen-containing solvent in the body of the sheet.

2,283,699. Textile and paper machine drive. Ernest L. Richardson, assignor to General

Electric Company, Schenectady, N. Y. Filed June 18, 1938. 5 claims. (Cl. 34-52).

2,283,740. Adhesive composition. Hanns Klemm, assignor to Davis & Company, Incorporated, Houston, Texas. Filed Dec. 13, 1937. 5 claims. (Cl. 260-45). A comminuted C-stage synthetic resin, a water-soluble partially reacted cold-setting urea-formaldehyde condensation product in the form of an aqueous glue and a hardening catalyst.

2,283,820. Method for making molded lignocellulosic products. Arlie W. Schorger and John H. Ferguson, assignors to Burgess Cellulose Company, Freeport, Ill. Filed Sept. 12, 1938. 4 claims. (Cl. 260-9). Natural lignocellulosic material is cooked with water at 135-200 deg. C. for 15 minutes to 1 hour, the water containing an alkaline earth hydroxide or carbonate to produce a pH of 5-7 in the cooked mass at the end of the cook; this material has plastic flow at 185 deg. C. and 3000 pounds per square inch to form hard, water-resistant resin-like products.

2,283,821. Molded lignocellulosic material and method of making same. Arlie W. Schorger and John H. Ferguson, assignors to Burgess Cellulose Company, Freeport, Ill. Filed Jan. 18, 1940. 6 claims. (Cl. 260-10). Natural lignocellulosic material is cooked with water at 188-225 deg. C. for 5 minutes to 1 hr., the water containing an alkaline substance to produce a pH of 4-6 at the end of the cook, and the dried material mixed with 1-10 per cent of a phenol; this gives a thermoplastic moldable product having high water resistance.

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2,283,927. Control apparatus. Wilfred H. Howe, assignor to The Foxboro Company, Foxboro, Mass. Filed Nov. 12, 1938. 25 claims. (Cl. 236-84). An electric circuit for the control of the moisture content of paper on the drying section.

2,284,098. Paper making machine. Richard T. Lang, assignor to American Voith Contact Co. Inc., New York, N. Y. Filed Aug. 19, 1936. 3 claims. (Cl. 92-44). A stationary open stock box with a nozzle fixed thereto at its lowermost end in which the lower lip is stationary and the upper lip is pivotally movable to vary the depth of the stock jet formed thereby.

2,284,142. Method of reclaiming coating materials. Daniel M. Gray, assignor to Hazel-Atlas Glass Company, Wheeling, W. Va. Filed Sept. 3, 1938. 27 claims. (Cl. 260-86). A process of reclaiming a coating layer from laminated material having an unsaturated absorbent layer capable of absorbing a substantial portion of the solvent to be used in reclaiming the coating layer.

2,284,321. Apparatus for making paper cord. Benjamin Milton Kimball, assignor to Millett Corporation, New York, N. Y. Filed June 4, 1940. 2 claims. (Cl. 57-32). Means for forming a twisted cord from a continuous strip.

2,284,491. Adhesive applicator for cylindrical container interiors. Irving F. Mandell, assignor to Reinforced Paper Bottle Corporation, New York, N. Y. Filed Feb. 9, 1939. 8 claims. (Cl. 91-47).

2,284,492. Automatic duplex mechanism for spinning container closures. Irving F. Mandell, assignor to Reinforced Paper Bottle Corporation, New York, N. Y. Filed March 13, 1939. 15 claims. (Cl. 93-55.1).

2,284,553. Paper waxing machine. John Bennett, Passaic, N. J. Filed Jan. 24, 1940. 3 claims. (Cl. 91-55).

2,284,563. Apparatus for making reinforced sheets. Kennett W. Dillman, Caruthersville, Mo., and Robert W. Barbee, Memphis, Tenn.; said Barbee assignor to said Dillman. Filed Dec. 16, 1938. 22 claims. (Cl. 154-1).

2,284,570. Coating and impregnating composition. Anthony H. Gleason, assignor to Standard Oil Development Company, Linden, N. J. Filed Feb. 21, 1939. 5 claims. (Cl. 260-18). A liquid drying oil vehicle blended with a long chain polyester which is an auto-condensation product of a saturated monocarboxylic fatty acid containing a hydroxyl group attached to a secondary carbon atom, aid polyester having a molecular weight of at least 5,000.

2,284,593. Process for decolorizing solutions. Max Seidel, Solin, Germany. Filed Aug. 3, 1938. 3 claims. (Cl. 210-62). The solutions are decolorized with lignin obtained in the saccharification of wood which has been treated with hot wood sugar wort.

### June 2, 1942

2,284,715. Abrasive article. Raymond C. Benner and Romie L. Melton, assignors to The Carborundum Company, Niagara Falls, N. Y. Filed Jan. 22, 1941. 13 claims. (Cl. 51-185). A flexible abrasive web impregnated with suitable adhesive binder and having abrasive grains distributed internally of the web.

2,284,716. Manufacture of abrasive articles. Raymond C. Benner and Romie L. Melton, assignors to The Carborundum Company, Niagara Falls, N. Y. Filed Jan. 22, 1941. 9 claims. (Cl. 51-297). A flexible abrasive web built up of a plurality of thin carded fibrous membranes with alternate layers of abrasive grains.

2,284,792. Blank handling machine. Nels A. Anderson, assignor to Fibreboard Products Inc., San Francisco, Calif. Filed Jan. 29, 1940. 11 claims. (Cl. 93-49).

2,284,800. Adhesive and method of making. John W. Close, assignor to United Wall Paper Factories, Inc., Chicago, Ill. Filed March 24, 1938. 6 claims. (Cl. 106-153). A corn protein base and an alkaline resinate in a water dispersion, heating at 170 to 210 deg. F. and adding a bleaching agent.

2,284,838. Method for drying porous wallboard. Gustav Valdemar Oeholm, Stockholm, Sweden. Filed Jan. 8, 1938. 1 claim. (Cl. 34-18). The board is dried in two steps, in the first of which the heat is applied exclusively to the surfaces of the board and in the second drying air is passed through the board.

2,284,860. Resinous derivatives from cellulose and other substances and alcohols. Eduard Faber, assignor to Polyxor Chemical Co., Inc., New Haven, Conn. Filed April 27, 1939. 9 claims. (Cl. 260-9). A mixture of at least one material selected from the group consisting of cellulose and pentosans, a relatively small quantity of sulphuric acid and an alcobol.

2,284,889. Method of destroying algae in cooling towers. Gerald M. Fisher, assignor to Socony-Vacuum Oil Company, Incorporated, New York, N. Y. Filed Feb. 17, 1941. 1 claim. (Cl. 210-23). Copper naphthenate is used.

2,285,028. Rosin size emulsion. Edmund A. Georgi and Arthur L. Osterhol, assignors to Hercules Powder Company, Wilmington, Del. Filed Sept. 16, 1940. 4 claims. (Cl. 106-238). A dilute aqueous emulsion of a rosin size is prepared by at least partially saponifying wood rosin which has been heat treated at 250-350 deg. C. for 5 min. to about 5 hrs., the heating reduces the tendency of the rosin to form 3.1 salt but insufficient to destroy its crystallizability.

2,285,041. Coating machine. Charles W. Mayer, Walter Luecders and Ralph J. Consler, Rochester, N. Y.; said Lueders and Consler assignors to said Mayer. Filed Aug. 8, 1938. 10 claims. (Cl. 91-13). A web coating machine.

2,285,053. Method of cementing aluminum to cellulosic material. Floricel A. Rojas, assignor of one-half to Walter H. Liebman, Jr., New York, N. Y. Filed Jan. 15, 1937. 10 claims. (Cl. 154-40). A sodium silicate cement is used.

2,285,095. Hot melt coating. David A. Rothrock and Harold C. Cheetham, assignors to The Resinous Products & Chemical Company, Philadelphia, Pa. Filed April 7, 1939. 3 claims. (Cl. 117-155). One side of a paper sheet is coated with a thermoplastic resin made from a dihydric dinuclear hydroaromatic alcohol blended with ethyl-cellulose, a wax and a plasticizer.

2,285,098. Method of making fiber plaster products. Eugene P. Schoch and William A. Cunningham, Austin, Texas. Filed March 7, 1941. 8 claims. (Cl. 18-48).

2,285,170. Sulphur burner. Richard E. Pritz, assignor to E. I du Pont de Nemours & Company, Wilmington, Del. Filed April 13, 1940. 2 claims. (Cl. 23-278).

2,285,228. Method of and apparatus for making bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed July 31, 1940. 17 claims. (Cl. 164-84.5).

2,285,242. Manufacture of barium sulphate. Isaac Ephraim Weber, Luton, and William Stanley Wood, Harpenden, England. Filed Dec. 12, 1936. 3 claims. (Cl. 23-122). Blanc fixe is prepared from barium sulphide and sulphuric acid.

2,285,290. Drier. Frank J. Lang, assignor to International Paper Company, New York, N. Y. Filed June 21, 1940. 2 claims. (Cl. 34-114). In a cylinder drier pairs of horizontally disposed air pipes for discharging streams of air in a direction parallel to the web and to carry moisture-laden air outwardly towards the ends of the drier cylinders, effecting a substantially uniform moisture gradient across the full width of the web.

2,285,371. Paper sheet testing device. Karl R. Stauss, assignor to International Business Machines Corporation, New York, N. Y. Filed March 4, 1940. 3 claims. (Cl. 73-51). A device for testing the edges of cards.

### June 9, 1942

2,285,447. Means for applying reinforcements. Malvin Lichter, New Rochelle, N. Y. Filed Dec. 13, 1939. 13 claims. (Cl. 154-1).

2,285,458. Adhesive material. Emile Pragoff, Jr., assignor to Hercules Powder Company, Wilmington, Del. Filed April 1, 1939. 8 claims. (Cl. 260-737). An age-resistant pressure-sensitive adhesive composition essentially comprising rubber and 20-30 per cent of a rosin, resin acid or rosin ester.

2,285,490. Felted article and process for its production. Aubrey E. Broderick, assignor to Carbide and Carbon Chemicals Corporation, New York, N. Y. Filed March 21, 1941. 19 claims. (Cl. 117-157). Paper is treated with an aqueous solution containing a water-soluble cellulose ether, a polyhydric alcohol and a water-soluble aldehyde, and heating to remove the elements of water; the resulting paper has a high dry and wet strength.

2,285,531. Apparatus for applying surface coatings, as paint, to paper, as bread wrappers, etc. Cecil M. Rhodes and Lyle L. McGladrey, assignor to Rapinwax Paper Company, Minneapolis, Minn. Filed Jan. 18, 1939. 9 claims. (Cl. 91-30).

2,285,537. Infold and outfold box machine. Melvin H. Sidebotham, West Newton, Mass. Filed Jan. 23, 1940. 19 claims. (Cl. 93-49).

2,285,570. Pressure-sensitive adhesive. Corliss F. Cummins and Kenneth D. Bacon assignors to The Dow Company, Midland, Mich. Filed March 2, 1940. 9 claims. (Cl. 260-36). The composition consists of polystyrene and 1.5-6 parts of a triaryl phosphate.

2,285,579. Emulsions. Erich Gröner, assignor to Röhm & Haas Company, Philadelphia, Pa. Filed Feb. 28, 1939. 3 claims. (Cl. 252-311.5). A waterproofing composition comprises paraffin emulsified in an aqueous solution comprising water, soap and a salt of a polymerized carboxylic acid (acrylic, methacrylic and maleic acid) and a water-soluble of a heavy metal.

2,285,617. Machine for waxing and plaiting paper. Fred Schwartz, assignor to Fort Howard Paper Company, Green Bay, Wis. Filed July 26, 1938. 8 claims. (Cl. 154-30).

2,285,755. Method of making insulating tape. Carl Mosier and John L. Mohun, Jr., assignors to Union Asbestos & Rubber Company, Chicago, Ill. Filed Nov. 1, 1938. 6 claims. (Cl. 154-28).

2,285,806. Means for preventing fraudulent alteration of documents. Wilmot S. Close, Mountain Lakes, N. J. Filed Nov. 2, 1940. 2 claims. (Cl. 283-9). The portion of the sheet intended to receive the inscription has its surface broken and certain of the fibers dislocated and projecting therefrom, so that the ink will be diffused in the area and make alteration practically impossible.

2,285,846. Slitting device. William M. Stocker, assignor to Cameron Machine Company, Brooklyn, N. Y. Filed May 2, 1941. 5 claims. (Cl. 164-65).

2,285,852. Water-swelling nonfibrous pellicle with a water-proof coating. Ralph T. K. Cornwell and Charles M. Rosser, assignors to Sylvania Industrial Corporation, Fredericksburg, Va. Filed May 14, 1938. 4 claims. (Cl. 91-68). The waterproofing coating consists of nitrocellulose, a heat-hardened urea-formaldehyde resin and a plasticizer.

2,285,876. Waste sulphite liquor recovery. George H. Tomlinson, Westmount, Quebec, Canada. Filed Jan. 26, 1938. 24 claims. (Cl. 23-131). A method of burning the combustible organic constituents of magnesia base sulphite waste liquor in suspension under self-sustaining combustion conditions and at a temperature below the fusion temperature of the noncombustible constituents to yield a dry unsintered ash containing a high percentage of caustic magnesia.

2,285,902. Treatment of black liquor soap and the like. Ludwig J. Christmann and Alfred G. Houpt, assignors to American Cyanamid Company, New York, N. Y. Filed June 8, 1938. 13 claims. (Cl. 260-97.5). The fatty acids are separated from the resin acids by forming a hot, substantially anhydrous solution of the acids and alkali in an organic solvent, cooling the solution and thus separating the fatty acid salts.

2,285,911. Paper cutting machine. William A. De Hart, assignor to Kamket Corporation, New York, N. Y. Filed March 3, 1939. 29 claims. (Cl. 77-22).

2,286,112. Wax decomposition inhibitor. Albert A. Schilling and George H. Latham, assignors to Remington Arms Company, Inc., Bridgeport, Conn. Filed June 26, 1940. 11 claims. (Cl. 117-158). The hot paraffin wax bath used to impregnate shot shells contains at least 0.2 per cent of its weight of a polymethylated phenolic material.

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2,286,244. Asphalt preparation. Charles H. Whitacre, assignor to The Standard Oil Company, Cleveland, Ohio. Filed Dec. 9, 1940. 10 claims. (Cl. 106-232). Small amounts of wood liquid rosin acids and sulphate of aluminum or iron are incorporated with asphalt.

2,286,259. Manufacture of coated paper. James H. Cagle, assignor to Glenn Davidson, Aurora, Ill. Filed Feb. 20, 1940. 5 claims. (Cl. 117-83). Paper is coated with starch, partially dried, coated with more starch and, before the latter coat is dry, treated with a top

coating of soya bean proteinous material and finely divided mineral filler.

2,286,414. Treatment of asphalt. Arthur B. Hersberger, assignor to The Atlantic Refining Company, Philadelphia, Pa. Filed Aug. 5, 1939. 2 claims. (Cl. 106-269). An asphalt of reduced staining tendency from flux asphalt contains a small amount of water-insoluble soap; the product is subjected to air blowing at an elevated temperature.

2,286,505. Polymerized chloroprene adhesive. John L. Perkins, assignor to B. B. Chemical Co., Boston, Mass. Filed March 4, 1940. 2 claims. (Cl. 260-17). The adhesive consists of 0.5-2.5 pounds of polymerized chloroprene per gallon of organic solvent and 1-10 per cent of ethylcellulose.

2,236,541. Blank cutting and feeding means for paper cup machines. Leo M. Harvey, Los Angeles, Calif. Filed Oct. 16, 1940. 14 claims. (Cl. 164-28).

2,286,595. Apparatus for drying webs of paper regenerated from cellulose derivatives. Ernest Bleibler, Ghent, Belgium. Filed March 10, 1938. 7 claims. (Cl. 34-60). A roller train for supporting and feeding a web through a base structure, a ventilation chamber and a ventilating device which circulates air over the lower surface of the web.

2,286,643. Molding compositions from naturally occurring cellulosic materials and method for preparing the same. Ralph Oliver Phillips and Ernst Hugo Werner Rottsieper, assignors to The Forestal Land, Timber and Railways Company, Limited, Epsom, England. Filed March 4, 1941. 10 claims. (Cl. 260-10). A fibrous cellulose product containing a substantial content of catechol tannins and a formaldehyde-yielding body.

2,286,692. Method of and apparatus for producing rolled rims on paper cups. Frederick C. Smith, assignor to United States Envelope Company, Springfield, Mass. Filed Jan. 10, 1941. 4 claims. (Cl. 93-36.5).

2,286,744. Process of fireproofing. Martin Leatherman, Hyattsville, Md. Filed July 5, 1939. 10 claims. (Cl. 117-137). The material is coated with a suspension of a plurality of metallic oxides of tin, lead, etc., in an organic solution of a chlorinated resin.

2,286,801. Apparatus for applying moisture resistant material to bags. Burton A. Hannewald and Anson M. Keller, assignors to Bemis Bro. Bag Co., Indianapolis, Ind. Filed June 6, 1940. 8 claims. (Cl. 9-50).

2,286,807. Method of making insulated electrical conductors. Vaughn L. Johannessen, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed Sept. 15, 1938. 3 claims. (Cl. 82-41). Six parts of paper pulp and 3 parts by weight of a powdered solid condensation product of cashew nut oil (melting point 180-200 deg. F.) in 191 parts of water are used to coat a wire strand, which is then heated to remove the water and melt the grains of powder.

2,286,824. Manufacture of sheet material. Gunnar W. E. Nicholson, assignor to International Paper Company, New York, N. Y. Filed Jan. 12, 1938. 1 claim. (Cl. 92-40). A layer of pulp on the Fourdrinier wire is dehydrated to impart a substantially permanent set to the fibers but leaving the upper surface in a watery condition, a thin aqueous adhesive solution is flowed upon the watery surface, an additional layer of cellulose fibers if flowed upon this surface, and the whole dehydrated by suction.

2,286,942. Method of manufacturing paper and/or board. Alvin Tuten, assignor to International Paper Company, New York, N. Y. Filed July 11, 1939. 1 claim. (Cl. 92-39). A method of making an interfelted cellulose fibrous web, which consists in laying down on a web formed from a primary headbox a secondary web of fibers from a secondary head box located about midway of the wire section.

2,286,968. Method for continuously producing vulcanized fiber. Gustave E. Landt, assignor to Continental-Diamond Fibre Company, Newark, N. J. Filed Feb. 1, 1941. 6 claims. (Cl. 154-34). A method of passing a formed laminated strip through a peptonizing bath and then through leaching and puring baths to wash the peptonizing bath from the strip, the purpose being to prevent disturbance of the cellulose micella orientation and thereby maintain the interlaced relationship of the micelle structure.

### June 23, 1942

2,287,012. Winding machine. Edward J. Abbott, assignor to Abbott Machine Company, Wilton, N. H. Filed Aug. 1, 1940. 14 claims. (Cl. 242-18).

2,287,015. Process and apparatus for manufacturing paper cups. Walter E. Amberg and Stephen W. Amberg, assignors to Universal Paper Products Company, Chicago, Ill. Filed Aug. 3, 1940. 9 claims (Cl. 93-36.2).

2,287,060. Method of making waterproof sandpaper. Byron J. Oakes, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed March 10, 1933. 7 claims. (Cl. 51-300). The backing material is covered with a sizing coating of a polymerized resin-oil complex in a volatile vehicle, a portion of the vehicle removed by aeration, and over this is applied a water-proof binder coating of a resin-oil complex.

2,287,063. Container closure liner. James Wallace Raynolds, assignor to The Raolin Corporation, Charleston, W. Va. Filed Jan 30, 1939. 3 claims. (Cl. 288-34). Paper is coated with rubber chloride containing 5-30 per cent of polymerized vinyl acetate to protect it from greases, petroleum hydrocarbons, and solutions of acids, bases and salts.

2,287,064. Stable dry compositions useful as bleaching and oxidizing agents. Joseph S. Reichert, Samuel A. McNeight, and Arthur A. Elston, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed May 1, 1940. 11 claims. (Cl. 252-186). The composition comprises a solid inorganic peroxygen compound and an organic acid anhydride.

2,287,121. Machinery for making containers. Walter F. Newhouse, Benton Harbor, Mich. Filed Sept. 16, 1939. 13 claims. (Cl. 147-47). Machine for making a round container having a bottom and side walls.

2,287,148. Wear and hardness testing instruments. Ralph F. Taber, North Tonawanda, N. Y. Filed May 20, 1938. 12 claims. (Cl. 73-51).

2,287,161. Coated cellulosic products and method for producing the same. Robert W. Ball, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Jan. 23, 1940. 16 claims. (Cl. 106-214). An aqueous adhesive coating composition containing anhydrite treated with about 0.1-2 per cent of a water-soluble alkali polymeric polyhydroxy compound from the group consisting of carboxyalkyl ethers and acid esters of carbohydrates and polyvinyl alcohols as a thinning agent.

2,287,322. Apparatus for testing color. Oscar E. Nelson, assignor to West Virginia Pulp and Paper Company, New York, N. Y. Filed Dec. 14, 1939. 1 claim. (Cl. 250-41.5). A device for measuring the reflection characteristics of a surface employing a photoelectric cell.

2,287,332. Rotary digester. James E. Steely, assignor to West Virginia Pulp and Paper Company, New York, N. Y. Filed May 25, 1939. 2 claims. (Cl. 92-18). An inclined rotary digester for the manufacture of semi-chemical pulp.

2,287,348. Coating paper. James Grant Hayden, Jr., assignor to West Virginia Pulp and Paper Company, New York, N. Y. Filed May 11, 1939. 5 claims. (Cl. 117-155). Clay coating is bonded to the base sheet by a synthetic water-insoluble plastic material of the group consisting of ethylcellulose, polyvinyl acetates, polystyrene, cellulose acetobutyrate, etc.

2,287,350. Doctor mechanism for rolls and cylinders. Frederick W. Lodding, Worcester, Mass. Filed Nov. 8, 1938, 3 claims. (Cl. 92-74).

2,287,410. Ernest R. Boller, assignor to E. I du Pont de Nemours & Company, Wilmington, Del. Filed Dec. 17, 1940. 11 claims. (Cl. 106-84). A sodium silicate-clay adhesive.

2,287,411. Adhesive. Ernest R. Boller, and Raymond F. Remier, assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed Dec. 19, 1940. 4 claims. (Cl. 106-84). A china clay-silicate adhesive.

2,287,426. Hot carbon spotting apparatus. Louis F. Hageman, assignor to American Sales Book Company, Inc., Niagara Falls, N. Y. Filed Nov. 19, 1938. 5 claims. (Cl. 91-50). Apparatus for applying isolated carbon spots to moving stationery.

2,287,536. Urea-phenol-formaldehyde adhesive. Paul O. Powers, assignor to Armstrong Cork Company, Lancaster, Pa. Filed June 8, 1939. 3 claims. (Cl. 260-45).

2,287,718. Apparatus for gumming the flaps of envelopes or bags. Harold Holmyard Beasley, Ashton Gate, Bristol, England. Filed July 5, 1941. 7 claims. (Cl. 93-62).

2,287,719. Arranging and feeding envelopes or bags for gumming the flaps. Harold Holmyard Beasley, Ashton Gate, Bristol, England. Filed July 5, 1941. 9 claims. (Cl. 271-8).

2,287,720. Gluing or gumming articles. Harold Holmyard Beasley, Ashton Gate, Bristol, England. Filed July 5, 1941. 9 claims. (Cl. 91-54).

### June 30, 1942

R22,127. Composition of matter and process of preparing the same. Joseph E. Plumstead, assignor to West Virginia Pulp & Paper Company, New York, N. Y. Original No. 2,186,040 dated Jan 9, 1940. Application for reissue Nov. 16, 1940. 18 claims. (Cl. 106-306). A method of preparing substantially water-insoluble, opaque alkaline earth metal carbonate pigment particles having corroded surfaces.

2,287,776. Method of sealing moisture in sheet fiber material. Llewellyn Biggs, assignor to American Can Company, New York, N. Y. Filed Dec. 27, 1938. 1 claim. (Cl. 117-60). The fibrous web is passed through a bath of water, the excess of water is removed and the moistened web is passed through a bath of molten wax; such material may be drawn without cracking.

2,287,817. Can end assembling machine. John H. Murch, assignor to American Can Company, New York, N. Y. Filed Aug. 24, 1940. 7 claims. (Cl. 93-55.1).

2,287,837. Method and apparatus for applying coating materials. James S. Smyser, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Filed Jan. 22, 1941. 6 claims. (Cl. 117-17). A method of positioning an adhesively coated surface in an electrostatic field and of applying solid particles to this surface.

2,287,849. Antistick surface coating. Clarence Walter Wilson, assignor to California Fruit Growers Exchange, Los Angeles, Calif. Filed Aug. 17, 1940. 14 claims. (Cl. 206-84). To produce a relatively nonsticky surface of asphalt, bitumen and the like, a coating containing effective quantities of pectate is used.

2,287,905. Coating machine. Howard B. Richmond, Gilber K. Dickerman and William F. Thiele, assignors to Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. Filed Jan. 8, 1941. 8 claims. (Cl. 91-48). A method of roll coating paper.

2,287,957. Bag closing and sealing apparatus. Howard G. Allen and Karl Clifford Saunders, assignors to Consolidated Packaging Machinery Corporation, Buffalo, N. Y. Filed Aug. 4, 1940. 18 claims. (Cl. 93-6).

2,288,060. Solid water-in-rosin paper size. Fritz Arledter and Alois Allina, assignors to 2, 1938. 4 claims. (Cl. 106-238). Molten Gustav Staelin, Larchmont, N. Y. Filed Sept. rosin at 80-100 deg. C. is treated slowly with 5 per cent by weight of water and 01.-0.5 per cent of soluble alkali, the mixture is cooled to 40-60 deg. C. and treated with 3-20 per cent of at least two protective colloids (starch, dextrin, glue, gelatin, casein) and then with up to 2 per cent of ammonia; this gives a concentrated water-in-rosin gel containing an amount of total alkali only sufficient to combine with all the protective colloids present and having up to 93 per cent of free rosin.

2,288,064. Time cycle control mechanism. Nikolai Belaef, assignor to Mason-Neilan Regulator Company, Boston, Mass. Filed Nov. 13, 1939. 6 claims. (Cl. 236-46). A time cycle controller for a digester.

2,288,147. Safety paper. Burgess W. Smith, assignor to The Todd Company, Inc., Rochester, N. Y. Filed March 12, 1941. 9 claims. (Cl. 117-1). The paper contains a leuco derivative of a triphenylmethane dye.

2,288,161. Method of an apparatus for forming fiber can bodies. Alexander G. Hatch and Robert S. Condon, assignors to Fibre Can Machinery Corporation, Rutland, Vt. Filed July 21, 1938. 24 claims. (Cl. 93-81).

2,288,170. Thermal insulating material. William J. Moeller, assignor to The Philip Carey Manufacturing Company, Lockland, Ohio. Filed May 28, 1936. 5 claims. (Cl. 154-45).

2,288,209. Suction head. Beniamin Ray Sammons, assignor of one-half to The Atlanta Envelop Co., Atlanta, Ga. Filed Dec. 20, 1941. 3 claims. (Cl. 271-3). A method of gumming blanks.

2,288,293. Manufacture of laminated paper, cardboard and the like. Colin Metcalf, Wilmslow, England. Filed July 6, 1939. 4 claims. (Cl. 154-40). The adhesive is an aqueous emulsion of pitch or bitumen containing sufficient rubber latex (10-25 per cent) to check migration through the individual layers of the product.

2,288,304. Machine for die cutting paper. Albert B. Schlattner, assignor to The Printing Machinery Company, Cincinnati, Ohio. Filed May 22, 1941. 13 claims. (Cl. 164-24). A machine for cutting labels, etc.

2,288,351. Wax emulsion. Richard Griffith, assignor to National Oil Products Company, Harrison, N. J. Filed Dec. 16, 1938. 1 claim. (Cl. 252-311.5). Three parts of a hard vegetable wax and one part of low melting paraffin wax are emulsified by means of an organic amine soap of a higher unsaturated fatty acid containing at least ten carbon atoms and two double bonds per molecule.

2,288,389. Coated sheet and method of preparing same. Robert C. Bour, assignor to Ditto, Incorporated, Chicago, Ill. Filed Dec. 2, 1939. 17 claims. (Cl. 41-31.6). A sheet adapted to receive and retain color impressions of increased fastness to light has a coating of a water-swellable clay in a substantially unswollen condition.

2,288,476. Size emulsion and method of preparing the same. Robert T. Mashburn, assignor to Hercules Powder Company, Wilmington, Del. Filed Sept. 7, 1939. 7 claims. ( Cl. 106-144). An acid gas is passed into an aqueous dispersion of saponified rosin to partially decompose the soap and liberate free rosin, giving an aqueous rosin sizing dispersion containing a high proportion of free rosin on the dry basis and stable against flocking when diluted with hard water.

# Colloidal Properties of Aqueous Dispersions of Titanium Dioxide*

By S. W. Martin[1]


## Abstract

*Titanium dioxide, consisting of particles with a dense internal structure, was selected from the high opacity fillers to exemplify one type of aqueous dispersion. In this group the colloidal properties originated for most practical purposes at the external surface of the individual particles. Two research tools were described to ascertain the nature of this interface. One determined the particle size distribution from which the extent of the interfacial area associated with a given pigment dispersion was calculable. The other measured the electrokinetic mobility of the particles and evaluated the electrical intensity factors at the interface. The combined results of these measurements could be correlated with the dispersion and flocculation of dilute pigment suspensions. Once the preceding fundamentals were available, it was possible to bridge the gap between "low solids" and "high solids" phenomena of titanium dioxide dispersions. This particular phase of the study was also concerned with the factors that markedly influence pigment stability under the critical dispersive conditions which are inherent in highly pigmented systems.*

*Finally, the applicability of colloidal information to papermaking was noted in pigment retention phenomena and coating formulations.*


One of the objectives of industrial research is to bridge the gap often existing between so-called fundamental and practical knowledge. This, when accomplished, definitely tends to stimulate technical progress. In papermaking an excellent starting point for demonstrating the applicability of fundamental information is found in finely subdivided fillers—i.e., pigments, clays, carbonates, etc. Furthermore, since the phenomena arising from matter in a state of subdivision larger than ordinary molecules is the concern of colloid science, a logical approach to an examination of fillers dispersed in aqueous media presents itself and is made the basis of the following discussion.

Implied in the subdivision of matter is the concept of a particle. Recently, von Buzágh *(1)* and Hauser *(2)* have considered the properties of colloid systems in terms of the geometry of a particle. The principles evolved may be simply introduced and visualized with the aid of an analogy to the world of macroscopic dimensions. Were one to describe a brick building the specific composition, size and shape of the various types of building bricks employed would receive immediate attention. Next the distribution and arrangement of the bricks in space are required to specify the internal structure of the building. The preceding along with additional information as to external shape and size would at least outline the design of the building. Since any evaluation of property can hardly overlook the surroundings, the description should be extended to include the community or assemblage of buildings. This in turn necessitates a classification of the various structures especially as to kind, size, shape, etc. To distinguish uniquely one assemblage from any other, a mention of the number of buildings in a given area would complete the description. Surprising as it may seem at first, the preceding architectural properties of an assemblage of buildings are comparable in many respects to those of a colloid system consisting of filler particles dispersed or suspended in an aqueous medium.

When dealing with fillers it is customary to specify the percentage weight retained on a 325 mesh sieve *(3)* or its +44 microns equivalent (1 micron = $10^{-4}$ cm.). This quantity is usually reduced in modern grinding practice to extremely small proportions. One turns therefore to the subsieve range for the significant differences in particle size. And in a colloidal approach to fillers it becomes necessary to start at the other extreme—i.e., with elemental units of at least atomic dimensions. There will be made evident as a result of this approach an interesting fact. The colloidal properties of aqueous dispersions of fillers may be correlated with and taken as the resultant of the composition-structural characteristics of the particles that make up the aqueous dispersions.

To demonstrate composition-structural relationships, titanium dioxide pigments were selected as representative of the high-opacity type of filler. Even with this definite limitation in subject matter, the fundamental nature of aqueous dispersions involves a wide variety of colloidal topics and it will hardly be possible to treat each to the extent that might be desired. Instead an attempt will be made to develop a panoramic picture of the significant variables inherent in an aqueous dispersion of titanium dioxide.

## Dimensional Levels in Fillers

Before proceeding to a consideration of the aforementioned, it might be well to become oriented first with respect to the scale of dimensions involved.

The different structural levels in fillers are represented diagrammatically in Fig. 1. According to present ideas of atomic structure, the positive charge of the atom is located in a central core of material designated the nucleus, around which rotate negatively charged electrons in orbits varying in size and kind. To acquire the necessary stability the number of electrons must balance the excess positive charge on the nucleus and the atom becomes electrically neutral when examined from some external point. If an electron were removed from within the atom, then a singly charged positive ion results. Should an extra electron become attached to the atom, a singly charg-

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 16-18, 1942.
This paper in slightly different form was presented before the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry, Kalamazoo, Mich., May 1, 1941.
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ed negative ion is formed. Extensive X-ray investigations have proven that atomic ions exist in crystalline materials and may be regarded as the building stones of matter. Tables of ionic radii *(4, 5, 6)* are available and the dimensions are in magnitude about one Angstrom (1A = $10^{-8}$ cm.). This penetrating method of observation has unravelled the spatial arrangements of the atomic ions which form the primary particles or building bricks. As representative of the simplest type, the cubic arrangement of $Na^+$ and $Cl^-$ ions in a sodium chloride lattice may be cited as a well-known example. It should be pointed out that many physical properties of solids are directly attributable to the atomic ions and their spatial arrangement in the building bricks of matter. The latter range in size to roughly ten times the dimensions of the individual ions and represent the third structural level. Now by taking the required number of primary particles and piling them up in accordance with a definite architectural plan, either the true colloidal or suspensoid aggregates are constructed with the dimensions indicated in Fig. 1. It is evident from the above that within a solid having a given chemical composition there exist discrete structural levels.

### Internal Structure of the Titanium Dioxide Particle

Commercial titanium dioxides used by the paper manufacturer analyze about 99% $TiO_2$. The impurities are inorganic and vary somewhat with the process of manufacture, treatments, etc. The two industrially important forms of titanium dioxide are the anatase and rutile crystalline modifications. As shown in Fig. 2 the primary particles are tetragonal in shape. The radii of the titanium and oxygen ions which make up these elementary building bricks are 0.67 and 1.31 A *(7)*, respectively. An idea of the compactness of the arrangement of the ions within the building brick may be obtained from a schematic diagram of the crystal structure of rutile by Berberich and Bell *(8)*. Then also according to Stillwell *(9)* "The resistance of a crystal to compression should be determined primarily by the compactness of its building stones." The data presented in Table I tend to confirm this viewpoint.

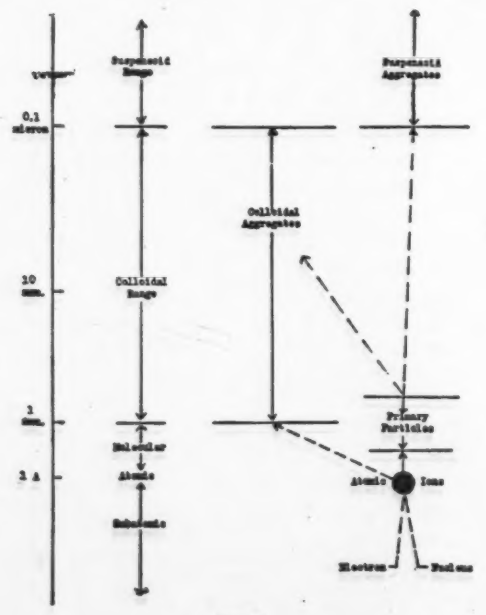


FIG. 1
Structural Units in Fillers

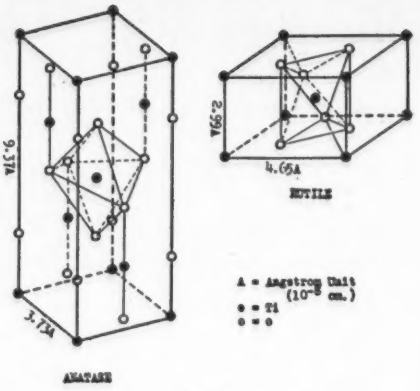


FIG. 2
Crystal Structure—Units

TABLE I.—COMPRESSIBILITIES (*10*) AND HARDNESS (*11*) OF VARIOUS CRYSTALLINE COMPOUNDS

| Formula | Name | * Coefficient of compressibility ($10^6$B) | Hardness (Moh's scale) |
|---|---|---|---|
| $Al_2O_3$ | Corundum | 0.40 | 9 |
| $SnO_2$ | Cassiterite | 0.49 | 6–7 |
| $TiO_2$ | Rutile | 0.59 | 6–6.5 |
| ZnO | Zincite | 0.78 | 4–4.5 |
| $CaSO_4$ | Anhydrite | 1.84 | 3–3.5 |
| $CaSO_4.2H_2O$ | Gypsum | 2.50 | 1.5–2 |

* B = Coefficient of compressibility (reciprocal megabaryes). Temperature (deg. C.) = 0. Pressure (megabaryes) = 125.

Relative to the material listed, titanium dioxide has a relatively high resistance to compression and deformation which are both indicative of a dense internal structure. In Table II some physical properties of titanium dioxide are included.

TABLE II.—THE PHYSICAL PROPERTIES OF TITANIUM DIOXIDE (*8*)

| Properties | Anatase | Rutile |
|---|---|---|
| Crystal structure | Tetragonal | Tetragonal |
| Specific gravity | 3.90 | 4.25 |
| Refractive index | 2.55 | 2.90 |
| | 2.49 | 2.62 |
| Mean dielectric constant | 31 | 114 |
| Coefficient of expansion/deg. C. | 4.7–8.2 × $10^{-6}$ | 7.1–9.2 × $10^{-6}$ |
| Hardness (Moh's scale) | 5.5–6.0 | 6.0–6.5 |
| Melting point, deg. C. | | 1800–1900 |

To the paper manufacturer the most outstanding property is the high refractive index which to a considerable extent accounts for the unique opacifying characteristics of titanium dioxide as a beater addition, as a surface application, or in the coating mix.

In Fig. 2, the rutile cell dimensions are given as 4.65A by 4.65A by 2.99A. One might theoretically pile up 100 such bricks along each axis and construct accordingly a colloidal aggregate of titanium dioxide. If 1000 such building bricks are stacked up along each axis, a suspensoid particle results which consists of $10^9$ unit building bricks. It is with such aggregate particle sizes that we will be concerned. X-ray analysis, resistance to compression and deformation (as indicated by hardness) reveal a firm bonding of the building bricks within the titanium dioxide particle. This explains the interior being completely impervious to the dispersion medium. Consequently, given a titanium dioxide pigment, whose colloidal nature is to be investigated, attention must be focussed on the external architectural properties of suspensoid particles. In the following, the discussion will be

further restricted to the water dispersible (WD), anatase grade of commercial titanium dioxide since at present this product is used chiefly by the paper manufacturer.

### External Structure of the Titanium Dioxide Particle

A question might be raised as to why the true colloidal structural levels of Fig. 1 were bypassed in arriving at the external particle size. The reason is found in the fact that the opacifying properties which characterize a titanium dioxide pigment result when its high-refractive index is coupled in the process of manufacture with an optimum particle size. Figure 3 gives the size range within which a maximum scattering of visible light is obtainable when a high-opacity type pigment is dispersed in water. A minimum of 0.1-0.2 micron and a maximum of roughly 0.5 micron are extremes in particle size fixed by the wavelength values of ordinary light. Thus the external size of pigment particles is confined for at least most practical pigmentation purposes to a narrow band of the dimensional spectrum of matter. Associated with this state of subdivision is a large interfacial area of 10 to 60 sq. m. per cu. cm. of pigment.

Now that the extent of interfacial area has been indicated, it will suffice merely to state with references to the literature *(12, 13)* that a solid-liquid interface is the seat of residual forces of either a physical or chemical nature. These forces are responsible for a selective adsorption of ions at the external surface which sets up a condition represented in simplified form in Fig. 4. Experimental proof of its existence is obtained when an external electrical potential is applied to the particle. A movement in the fluid toward the indicated positive pole confirms the electronegativity of the ions attached to the surface of the pigment particle. This motion under the action of the superimposed electrical force is designated electrophoresis *(14, 15)* and by means of so-called electrophoretic measurements the nature of the interface may be ascertained. Electrical surface charges were introduced since they play an important role in many colloidal phenomena observed with pigments.

The discussion to this point has evolved the structural properties of the individual particles suspended in an aqueous medium. To arrive at a complete picture the next phase of this study is concerned with the group characteristics arising from an assemblage of individual particles.

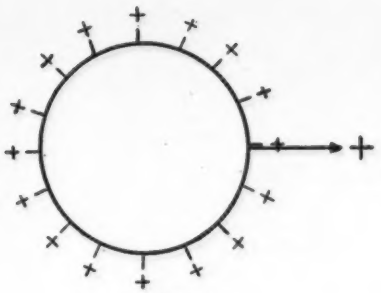

FIG. 4
Electrophoresis

### Group Properties of Particles

Pigment-type materials dispersed in a liquid by more or less practical methods are generally polydispersed which implies a distribution of particle sizes. The two principal methods of classification are shown in Fig. 5. The curves show the difference between a "size frequency" and its corresponding calculated "weight" distribution. It is evident from Fig. 5 that a size frequency emphasizes the fines whereas a weight distribution stresses the coarser particles of the distribution. The former type is characteristic of microscopic methods whereas the weight distribution is the direct result of sedimentation procedures. The importance of these measurements lies in the evaluation that can be made of the degree of deaggregation as well as the interfacial area to be associated with a suspended pigment. Consequently, it is of interest at this particular point to review briefly some of the methods which are suited for the measurement of particle sizes of fillers.

#### Microscopic Particle Size Measurements

The microscopic method is well known and has been described by Chamot and Mason *(16)* in considerable detail. Dunn *(17)* developed a microprojection technique which is particularly well suited to the measurement of the size frequencies of pigment-type materials. The procedure is also the basis of a tentative method of the American Society for Testing Materials *(18)*. The results, however, are subject to a number of limitations *(19)*: "1. To obtain a satisfactory field for projection or photography, the mount should not be more than a few particles thick. This requires pressure on the cover glass or some other method of rubbing out the sample to a very thin layer and on such small amounts of material the pro-

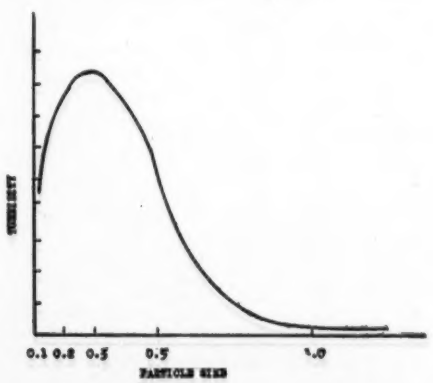


FIG. 3
Turbidity vs. Particle Size (38)

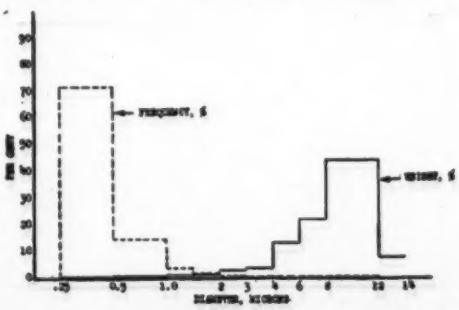

FIG. 5
A Comparison of Particle Size Distribution Types (39)

cedure may result in a greater degree of deaggregation than it is possible to attain by the usual methods of commercial dispersions. 2. In the case of non-uniform materials, difficulty is experienced in bringing both coarse and fine particles into focus at the same time. The lack of uniformity experienced in many pigments makes the method extremely laborious because of the necessity of measuring a large number of particles in order to obtain truly representative data." Aside from these, the useful magnification of the microscope employing visible or ultraviolet light is about 3000X. This imposes a limiting value of about 0.2 micron on the microscopic resolution of fine particles.

### Electron Microscope *(20-24)*

After several years of development the electron microscope has emerged from a scientific curiosity into a research tool in which the image is produced by a stream of electrons passing through the specimen. The principles embodied in the electron microscope are closely analogous to those of the microscope. Among the outstanding features is the high resolving power due to the extremely short wavelengths obtainable with an electron beam. With the new instrument detail even as fine as 50A may be resolved. Electron photomicrographs of a variety of materials have been taken and published in the above cited references.

### Sedimentation Methods[2]

When a dilute suspension of a filler is sedimented under the action of gravity, one quite general principle is operative providing the material gives a variety of particle sizes. The principle is expressed quantitatively in the following mathematical relationship.

$$p = s + t\ dp/dt \qquad (1)$$

The above equation states that after sedimenting a polydisperse system for a time $t$ the sediment $p$ is divisible into two portions. The fraction $s$ consists of coarse particles with sizes such that their settling times for the distance $h$ are equal to or less than $t$. The remainder—i.e., $t\ dp/dt$ or the fines— are composed of particles which also were settled even though their settling times were greater than $t$. The evaluation of the two fractions from a sedimentation curve, constructed with the weight of the sediments on the ordinate axis and settling times as abscissa is recognized as Odén's method of tangential intercepts *(25)*. Figure 6 shows diagrammatically the manner in which the coarse fraction can be separated from the composite quantity $p$. The subtraction of successive intercept values results in increments of $s$ to be associated with corresponding increments in the time variable. Obviously a distribution of the particles with respect to sedimentation time would not be desired since only an indirect measure of size is obtained. As such the above equation is quite limited in its application without a functional relationship between sedimentation time and the particle size $D$. Stokes' sedimentation formula supplies the required equation.

$$D = \sqrt{\frac{18\ nh}{(G_1 - G_0)\ gt}} \qquad (2)$$

$G_1$, $G_0$ = the specific gravities of the solid and dispersion medium respectively
$n$ = coefficient of viscosity of the dispersion medium
$h$ = sedimentation height
$g$ = gravitational constant
$t$ = sedimentation time

Among the sedimentation procedures utilizing the preceding principles are listed the sedimentation balance, Kelley sedimentation manometer, hydraulic elutriator, Andreasen pipe and hydrometer procedures. These have been described *(26, 27)* and inasmuch as settling methods are fairly well known, it will suffice to point out their chief limitation—i.e., the lower limit of resolvability for most materials is above 0.5 to 1.0 micron in particle size.

For very fine particles it was possible to overcome the limiting resolution of the ordinary microscope by taking advantage of the extremely small wavelengths of an electron beam. In a somewhat analogous manner, the gravitational resolvability of suspended fines may be increased sufficiently to sediment even the smallest colloidal sizes by a proper application of centrifugal force. The principles previously described as fundamental to gravitational sedimentation are carried over into centrifugal sedimentation with some modifications because of specific differences introduced by the centrifugal field of force. For example, Stokes' sedimentation formula, which is applicable to a laboratory beaker-type centrifuge, changes to the following.

$$D = \frac{6}{W}\sqrt{\frac{n \ln R/S}{2(G_1 - G_0)t}} \qquad (3)$$

$D$ = diameter of the spherical particle
$n$ = coefficient of viscosity of the dispersion medium
$G_1$, $G_0$ = specific gravities of the solid and dispersion medium, respectively
$W$ = angular velocity $= \frac{2\pi N}{60}$ where $N$ is the number of revolutions per minute
$R$ = distance from the axis of rotation to the bottom of the centrifuge tube
$S$ = distance from the axis of rotation to the meniscus of the suspension
$t$ = sedimentation time

Once a sedimentation curve (*see* Fig. 6) is obtained with a beaker-type centrifuge, tangential intercept calculations may be performed as outlined for gravitational sedimentation. This centrifugal technique *(27)* is well suited for the determination of the particle size distributions of fine pigments dispersed under conditions which simulate the industrial usage of the material. As an illustration of the

[2] This section is a condensed version of "The Determination of Subsieve Particle Size Distributions by Sedimentation Methods" which was published by the American Society for Testing Materials in a monograph entitled "Symposium on New Methods for Particle Size Determination in the Subsieve Range."

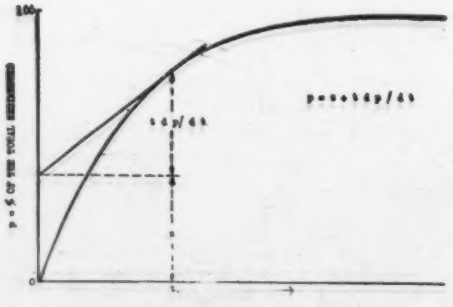

**Fig. 6**
**Oden's Method of Tangential Intercepts (28)**

TABLE III.—PARTICLE SIZE DISTRIBUTION OF TITANIUM DIOXIDE
(Water Dispersing Grade)

| Size interval, micron | % of the Total |
|---|---|
| +1.0 | 1.2 |
| 1.0-0.5 | 6.3 |
| 0.5-0.3 | 41.5 |
| 0.3-0.2 | 35.5 |
| <0.2 | 15.5 |

results obtainable with centrifugal sedimentation, a particle size distribution for an anatase titanium dioxide (WD) dispersed by high-speed agitation in distilled water is given in Table III.

The above particle size distribution is equivalent to a surface area of 21.4 sq. m. per cu. cm. of titanium dioxide pigment and the surface mean diameter is calculated equal to 0.28 micron.

In addition sedimentation methods have been found to offer a number of unique advantages in the study of solid-liquid dispersions of industrial interest:

(1) The effectiveness of dispersion technique, agents, etc., employed to deaggregate or suspend a pigment-type material may be evaluated. To illustrate, the variables of ball mill grinding, high speed agitation, etc., are amenable to particle size distribution analyses. Since practical conditions of dispersion may be simulated, considerable significance may be attached to a correlation of the particle size results with final pigmentation of paper, latex, viscose, etc.

(2) A weight distribution is the direct result of a sedimentation procedure. Therefore, the coarse in a given material are readily detected and representative results are obtained without too great an expenditure of time and effort.

(3) If it is permissible to sacrifice absolute accuracy in the determination, then rapid procedures for the control of particle size may be outlined. These methods measure accurately the relative degree of fineness of dispersed filler materials.

## Dispersion and Flocculation

### Low Solids

With a sedimentation technique available the total surface area associated with a given titanium dioxide dispersion is readily ascertained. But to account for the final pigmenting properties of such suspensions when used in papermaking, additional variables attributable to the solid-liquid interface have to be investigated. Electrophoretic measurements reveal the particles to be electronegatively charged with respect to the aqueous dispersion medium. In distilled water, the actual mobility of the particle is about 3

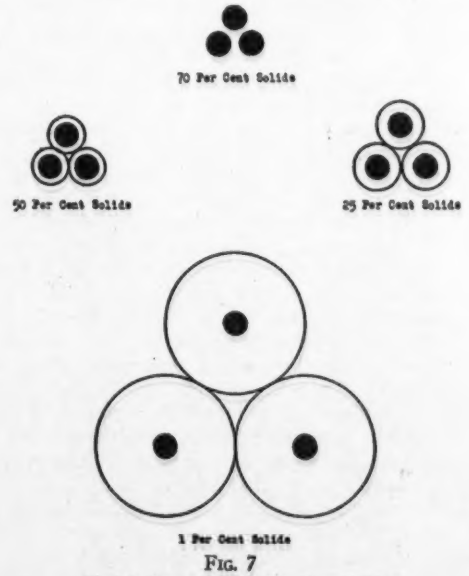


Fig. 7
**Particle Separation vs. Per Cent Solids**

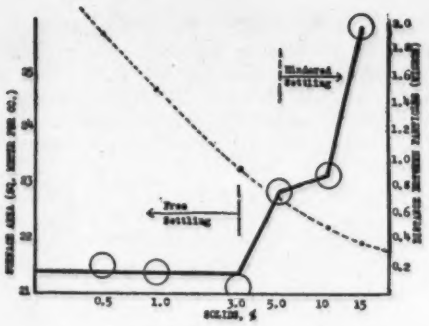


Fig. 8
**Free vs. Hindered Settling (29)**

microns per sec. per volt per cm. This fact is in accord with extensive theoretical and experimental information concerning an electrical mechanism by means of which many pigment suspensions are stabilized against the forces that tend to cluster the individual particles into large bulky flocculates. In acquiring electronegative charges the particles repel each other with sufficient force both to prevent immediate contact and to overcome the attractive or flocculating forces. The result of this particular balance of forces is a stable dispersion of the individual pigment particles. If $Mg^{++}$ or $Ca^{++}$ are added to the dispersion medium, the electronegative charges on the pigment particles are neutralized owing to the adsorption of these polyvalent cations. This adsorption destroys the electrical protective mechanism. The forces of attraction between the particles now exceed those of repulsion, and flocculation of the pigment is the natural consequence. The formation of large flocculates decreases the effective external surface area which is accompanied by a corresponding decrease in the opacifying power of the pigment. Flocculation may also be brought about by a variety of other methods. For example, if excessive amounts of alkali are added to a titanium dioxide (WD) suspension, the electrophoretic mobility of the particles decreases due to a diminishing potential difference between pigment particle and dispersion medium. A point is finally reached where attraction exceeds the repulsion between the particles and flocculation occurs. The stability of aqueous dispersions to destructive influences is of prime importance but is too broad a subject to be considered here in greater detail. However, the previous discussion does suggest that there are available in sedimentation combined with electrophoretic measurements effective tools for investigating the titanium dioxide interface in aqueous dispersions.

### High Solids

In order to complete a picture of the fundamentals of aqueous dispersions, there remains the variable of pigment solid content (weight basis) and its effect upon the properties of a solid-liquid system. A simple approach to this problem is possible through a consideration of the average distance of separation between the particles. By assuming a spherical particle of 0.3 micron in diameter, the average distance of separation with increasing solid content is shown schematically in Fig. 7. (*See* Appendix I for the calculations.) The central core represents the particle whereas the circumscribed circle shows the space within which the particle is free to move on an average without interference from any of its neighbors.

At 1% solids a relatively large "lebensraum" is observed. With increasing amounts of pigment contained in a given volume of suspension, the free space diminishes to such an extent that interference between the individual particles is anticipated. Actually, this is found to conform with experimental observations.

Increasing the solid content of a suspension has a marked influence on the motion of the individual particles in either a gravitational or centrifugal field of force. If the distance of separation is fairly large, then the particles are able to move without any noticeable hindrance. This is termed "free settling" and is a necessary condition whenever Stokes' sedimentation formulas are used to determine valid particle sizes. Above a critical value of solid content, the density of the population is such that the movements of individual particles become subject to considerable mutual interference. So-called "hindered settling" results whenever such a system is sedimented. Titanium dioxide (WD), dispersed in distilled water and submitted to centrifugal sedimentation, offers an excellent means for confirming the two types of settling.

A suspension of 25% solids was prepared by high-speed agitation of the pigment in distilled water. The slurry was then diluted to 0.5, 1.0, 3.0, 5.0, 10.0, and 15% solids by weight. Each suspension was sedimented with a beaker-type centrifuge according to the previously outlined technique. The particle size distributions were determined and the surface areas calculated. Since the same particle size distribution was used in each sedimentation and only solid content was varied, the calculated surface area could be expected to remain constant in the region where Stokes' law was not invalidated. An examination of Fig. 8 indicates that the existence of free settling of particles for dilutions to 3.0% or less. At a 5% concentration the average distance of separation is reduced to some extent. The particles encountered interference in settling and the distribution shifts to an apparent increase in fineness as evidenced by the high value for surface area. With higher solids, the effect becomes quite pronounced. Above 15% solids centrifugal sedimentation as a measurement is time consuming and an interpretation of its results would also be subject to some complexity. In view of this a more suitable measurement is required to bridge "low solids" with "high solids" phenomena of titanium dioxide (WD) suspensions. The measurement of flow characteristics of these suspensions presents a means for evaluating the physical condition of highly pigmented dispersions.

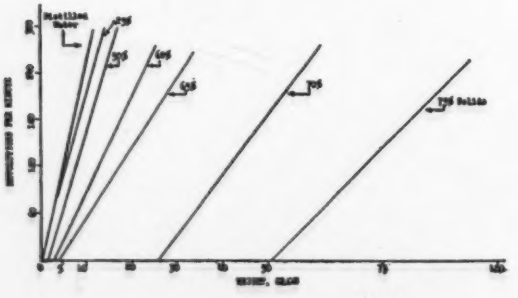

FIG. 9
Viscosimeter Measurements on Titanium Dioxide (WD) Dispersed in Distilled Water

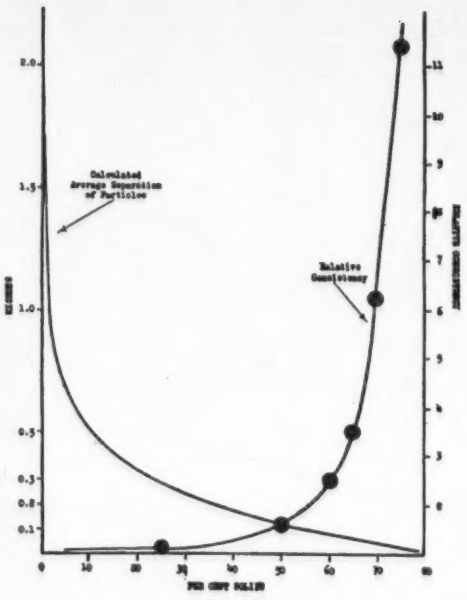

FIG. 10
Titanium Dioxide (WD) Dispersed in Distilled Water

## Flow Properties of Aqueous Dispersions of Titanium Dioxide (WD)

The flow characteristics of aqueous dispersions were evaluated with a Stormer viscometer. The dispersions were prepared by high-speed agitation and the original data have been plotted in Fig. 9. The number of revolutions per minute of the cylinder is a measure of the rate of flow and is plotted along the ordinate axis. The weight required to actuate the cylinder is given on the abscissa. Being an ordinary liquid, distilled water gives rise to a straight-line whose slope is proportional to the fluidity of the liquid *(30)*. An introduction of 25% by weight of dispersed pigment serves only to lower the fluidity somewhat. A raise in solid content to 50% effects a change from normal, liquid to so-called plastic flow *(31)*. The slope of the abnormal curve is proportional to the mobility whereas the intercept on the abscissa is known as the yield point. The yield point is defined as the shearing force required to initiate flow in a dispersion. Further increases in solid content raise the yield point as well as the internal friction of the suspension whose mobility is consequently lowered.

Another method of representing the data is shown in Fig. 10, in which the relative consistency[3] of each suspension was used to indicate flow properties. Also included is the calculated average distance of separation of the particles (*see* Appendix I). Below 10% solids, it is observed that there is available a large amount of free, mobile liquid and the flow as measured with a Stormer is negligibly different from water. When the distance of separation equals that of the particle diameter, the internal friction arising from the increased number of particles in a given volume produces a measurable consistency. As the distance of separation continues to diminish to a value about one tenth that of the particle diameter, the consistency experiences a rapid rise. Yet in spite of a close packing of the individual particles, the electrical forces of repulsion are sufficient to exceed those of attraction and a suspension with fair mo-

bility and good dispersion results even at 75% solids. From this it is apparent that given a titanium dioxide (WD) suspension which is fluid and well dispersed at high solids, dilution—i.e., further separation of the individual particles—will tend to minimize the load placed on the stabilizing mechanism. Under such conditions no changes occur in the degree of dispersion in going from high- to low-solids suspensions.

In the preceding, one is impressed with the fact that the interparticle distance at high solids causes the proper balancing of repulsive and attractive forces to be of critical importance. It would be expected that a shift of the equilibrium toward greater attraction would markedly influence the stability of the aqueous dispersion. Since the titanium dioxide particle has been carefully tailored to fulfill important pigment specifications, it is neither advantageous nor expedient to alter the interfacial characteristics through its internal structure. A much simpler procedure is to bring about a shift in the equilibrium of forces by predetermined additions to the dispersion medium. A few experiments were performed to illustrate the external control of dispersion or flocculation in aqueous dispersions which are highly pigmented with titanium dioxide (WD).

The relative consistencies for a number of aqueous dispersions of the same titanium dioxide (WD) are found in Fig. 11. As a reference line for excellent suspension properties, the characteristic curve for distilled water (*see* Fig. 10) was included. The identical dispersion technique and consistency measurements were repeated with a natural water of 67 p.p.m. hardness which was substituted for the distilled water. The points fell on the reference curve and indicated no change in suspension properties. Next a synthetic hard water was prepared by adding 220 p.p.m. of $CaCl_2$ to the distilled water. At high pigment solids thick pastes resulted with the liquid enmeshed within a solid-like structure. A suspension as low as 10% solids also was attempted and its consistency is shown in Fig. 11. Even though considerable free liquid was available, a high consistency is noted due to the formation of bulky flocculates which to a great extent immobilized the liquid. This condition is brought about by the well recognized flocculating action of $Ca^{++}$ ions which in effect neutralized the adsorbed negative charges at the pigment interface and the electrical protective mechanism was replaced by an excess of attraction between the individual particles.

[8] At 150 r.p.m. the weight on the abscissa was obtained for each suspension and divided by that of the distilled water to give a relative consistency value.

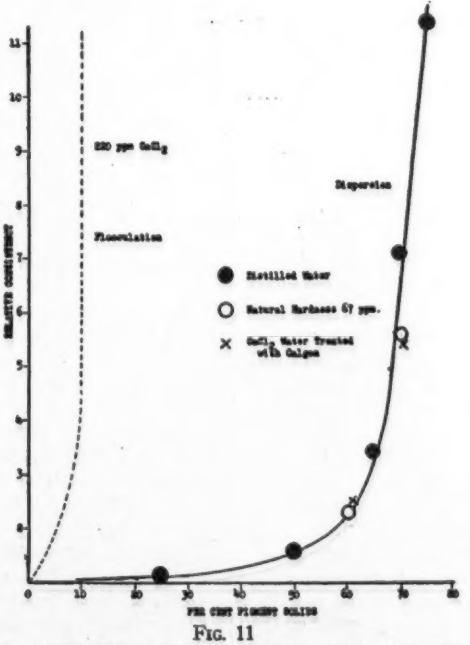


FIG. 11
Aqueous Dispersions of Titanium Dioxide (WD) Dispersion vs. Flocculation

### Additional Confirmation

Additional confirmation of the forces operative in the dispersion or flocculation of pigment systems similar to the one under consideration was obtained in another series of experiments. A base solution consisting of distilled water and 220 p.p.m. $CaCl_2$ was treated with 200, 20, and 5 p.p.m. of sodium hexametaphosphate. A complete reversal of suspension properties from one extreme to the other was experienced and is attributable to the efficacy of the sodium hexametaphosphate in eliminating the influence of the $Ca^{++}$ ions during the dispersion process. These observations are in accord with a conclusion arrived at by Hatch *(32)* in an independent study of sodium hexametaphosphate. "Besides possessing definite surface-active properties of its own, hexametaphosphate has the ability of forming soluble complexes with many multivalent cations; their concentration is thereby reduced to such an extent as practically to eliminate their agglomerating action on numerous colloid systems."

### Consistent Reproducible Results

The dispersed systems considered gave consistent reproducible results which were attributed to the following: (1) titanium dioxide pigments are manufactured subject to rigid compositional and physical requirements that characterize large-scale chemical production; (2) the theoretical treatment had only to be concerned with one mineralogical species; and (3) due to a compact, interior of the individual particles, the colloidal properties of aqueous dispersions were tied in with simple geometric considerations.

In passing one might note that the clay minerals —i.e., kaolin, montmorrilonite, etc.—are representative of another type of fillers, the chemical and mineralogical compositions of which are variable and dependent upon the natural source. Coupled with this also are the unique, varied internal as well as external particle structures of clay minerals. The resultant of a multiplicity of composition-structural variables approaches a much higher degree of colloidal complexity than that associated with aqueous dispersions of titanium dioxide.

### Application of Colloidal Fundamentals

With increasing usage of high-opacity pigments as beater additions, pigment retention when a fiber-filler furnish is dumped on the screen became the subject of numerous publications. In the case of titanium dioxide pigments, Willets *(33, -35)* investigated the factors affecting retention and accumulated considerable experimental data. The difference of opinion regarding the mechanism of retention led

Martin and Willets *(36)* to an analysis of the data in terms of colloidal information pertaining to the various constituents of the furnish. This publication is cited as an illustration of the utility of fundamentals in arriving at a better understanding of a practical, papermaking problem.

### An Important Field for Colloidal Research

Among the many requirements of a paper coating process, Massey *(37)* places considerable emphasis upon the fact that "the viscosity suitable for the process at hand be produced with the minimum amount of water or other vehicle since the smaller the percentage of water to the mix the less you will have to evaporate on the machine." This of necessity introduces aqueous dispersions of fillers with high solid content. Since a specific flow condition is also required for a suitable coating mix, it is evident that a critical balance must be established among the numerous colloidal variables inherent in final coating formulations.

In this field especially, colloidal research should play a significant role in future theoretical and practical developments.

### Conclusion

The survey which was made on aqueous dispersions of titanium dioxide may appear over-simplified to the expert on colloids. Nevertheless, it is felt that a useful purpose will be served if the paper technologist finds it possible *(a)* to assimilate an ever-increasing body of physical information on titanium dioxide dispersions, and *(b)* to employ the outlined method for examining the colloidal properties of fillers other than titanium dioxide.

### Acknowledgment

The writer wishes to acknowledge his indebtedness to J. L. Turner, Director of Research, Titanium Division of National Lead Company, and W. R. Willets of the Titanium Pigment Corporation for many helpful suggestions and the interest shown during the writing of this paper.

## APPENDIX I

### The Calculation of Minimum Separation of Particles*

The minimum distance of separation $y$ is related to the distance between the centers of two spherical particles $z$ by the following:

$$y = z - D$$

If one takes 1 cu. cm. of suspension and assumes that the suspended particles, whose number is $N$, are uniformly and on an average cubically distributed throughout the liquid; then $z = N^{-1/3}$. Next, a functional relationship for $N$ in terms of the specific gravity of the solid $G_1$, specific gravity of the liquid $G_0$, the fractional weight of the solids in suspension $M$ and the diameter of the spherical particle $D$ is obtained in the following equation.

$$N = 1.91/\left[1 + \frac{G_1}{G_0}\,\frac{1-M}{M}\right]D^3$$

By substituting in the above $G_1$ ($TiO_2$) = 3.9 $G_0$ ($H_2O$) = 1.0 and the average aggregate diameter $D$ = 0.3 micron, calculations of $N$ as a function of $M$ are included in Table IV.

* Copied from reference (27) Appendix III.

TABLE IV

| Solids, % | Number of Particles, $N$ | Minimum separation, micron |
|---|---|---|
| 0.01 | $1.82 \times 10^{9}$ | 7.9 |
| 0.10 | $1.82 \times 10^{10}$ | 3.5 |
| 1.0 | $1.82 \times 10^{11}$ | 1.45 |
| 10.0 | $1.96 \times 10^{12}$ | 0.50 |
| 25.0 | $5.57 \times 10^{12}$ | 0.265 |
| 50.0 | $14.5 \times 10^{12}$ | 0.110 |
| 60.0 | $19.6 \times 10^{12}$ | 0.070 |
| 70.0 | $26.5 \times 10^{12}$ | 0.036 |

### Indicates Relative Decrease in Particle Separation

Although subject to several assumptions, Table IV clearly indicates the relative decrease in particle separation with increasing concentration of suspended pigment.

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## Recommends Dismissal of Unfair Labor Practice Complaint

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 22, 1942—Trial Examiner Webster Powell today announced an intermediate report recommending dismissal of the unfair labor practice complaint that The Gray Envelope Manufacturing Company, Inc., Brooklyn, N. Y., had interfered with self-organization of its employees and had dominated and interfered with the administration of the Gray Envelope Employees' Association, an unaffiliated organization of the company's employees.

The trial examiner found that the formation of the association on March 3, 1941, was precipitated not by the company's assistance but by the combined fear of the employees of a plant shut-down due to financial difficulties and the organization and strike of the printing department which left the remaining employees "out in the cold".

The Trial Examiner also found that certain statements made during union meetings with F. Burns, company general manager, concerning organizational activities of the union were such as might appropriately be made by an employer with financial difficulties during the course of bargaining. The trial examiner said that emphasis was added to this conclusion by reason of the union agent's voluntary abandonment of organizational activities late in 1939 because of the company's financial condition.

The position of the union was not strengthened, the trial examiner said, both upon the repeated request of the company and upon the provision of the unit to the board, and its failure to seek a renewal of the contract covering the printing department employees in April 1942.

The trial examiner rejected the board attorney's contention that the impetus for the formation of the association was furnished by the meeting of February 21 and that this meeting was sponsored by the company in order to prevent the union from organizing its employees. Conceding that the meeting was held on company time and property, was in opposition to an outside union, and that some of the employees were notified by a company foreman, the trial examiner said that the company's employees "were genuinely alarmed at the possibility of losing their jobs if the union were organized" and demanded a wage increase. The actual formation of the association occurred without any assistance from or connection with company officers or supervisory employees, he said, except aid rendered to some of the employees who attended the meeting and conducted association business without having any deductions made from their pay while engaging in these activities.

"The union began its organizational efforts among the respondent's employees in August or September 1939," the trial examiner's report stated. "Some time in September of that year, Robert Bennett, representative organizer of the union, interviewed F. Burns, at that time general manager and treasurer of the respondent, concerning a collective bargaining agreement. In this interview the union claimed that the majority of the employees in the printing and shipping departments were members. During the interview Burns informed Bennett that the respondent was in a precarious financial position, that its stock was owned by employees of the West Virginia Pulp and Paper Company and that if the employees of the respondent were organized, the owners of the stock would liquidate the respondent's business. At that time the respondent owed approximately $150,000 to the West Virginia Pulp and Paper Company for paper stocks purchased in the course of its operations. After some discussion Bennett agreed not to press his request for a contract and thereafter temporarily discontinued the union's organizational efforts at the respondent's plant.

"In May 1940, Bennett met with several of the former members of the union to discuss the situation in the respondent's plant and it was agreed that the campaign to enlist membership among the respondent's employees, which had been suspended, would be resumed. However, except for monthly meetings participated in by a few of the employees, no further activity was engaged in until February, 1941. During the first half of February a number of employees in the printing department resumed active membership in the union."

Upon charges filed by the AFL union, the board issued its complaint on April 29, 1942. The company filed an answer on June 22 denying the commission of any unfair labor practices. Public hearing was held in New York City January 22-24. Parties have 30 days within which to file exceptions to the Intermediate Report and 20 days within which to request oral argument before the board in Washington.

## Ensign DeForest Reports for Service

BOSTON, Mass., July 20, 1942—Ensign Stuart Stevens DeForest U. S. N. R., reported for active service July 11 to the Naval Air Station, Squantum, Mass. Ensign DeForest is assistant treasurer of Stimpson, Incorporated. He was graduateed from Harvard University in the Class of 1940, with the degree of A.B. He majored in Economics and Business Administration. He is a member of the Pi Eta Club of Harvard and the Harvard Club of Boston. In December, 1940, with his father, Samuel D. DeForest, formerly with Hollingsworth & Whitney Company, he formed Stimpson, Incorporated of Boston, wholesale paper and twine merchants.

Stimpson, Incorporated have dedicated their efforts to serving the Government defense and wartime program, plants with Government wartime contracts, and essential industrials, which policy will be continued under the direction of Samuel DeForest, president.

## R. W. Raymond Made an Ensign

[FROM OUR REGULAR CORRESPONDENT]

SHELDON SPRINGS, Vt., July 20, 1942—Richard W. Raymond, Missisquoi Corporation, has been commissioned as an ensign in the United States Naval Reserve. Ensign Raymond, who has been located at the Missisquoi mill here, is a graduate of the University of Maine, where he majored in paper chemistry.

## S. K. Towson Heads Elwell-Parker

Following the passing of former president, Morris S. Towson on March 17, the newly elected officers of the Elwell-Parker Electric Company, Cleveland, Ohio, are: S. K. Towson, president and general manager; W. A. Meddick, vice president.

## Transporting Pulpwood

Confronted with an unusual problem in transportation of raw material from the forests to the mill, one large Quebec pulp and paper company solved its difficulties in an equally unusual but highly effective manner.

Instrumental in working out the solution and designing and building the equipment necessary to handle the job was the Hayes Manufacturing Company, Ltd., of Vancouver, B. C., one of the Pacific Coast's leading manufacturers of trucks and logging trailers.

The logging operations from which the pulp timber involved was to be moved to the mill by the most direct route were located on a 3000-foot range of hills with two watersheds. Twenty-five thousand cords of pulpwood were cut and piled on the lower watershed, but if the timber had been floated down from this location it would have been brought out at a point 25 miles away from the pulp plant. On the other hand, only six miles away was a second lake which emptied into the river on which the plant was located. The problem facing the company was one of devising an efficient means of carrying the 25,000 cords of wood from the lower to the upper watershed over a six-mile road with an eight per cent grade.

Speed in getting the pulpwood into the upper lake before the spring thaw was a prime factor, so that fast loading, big loads and quick turns were important.

To meet all these requirements, the Hayes engineers designed a special trailer with dump body of gargantuan dimensions—34 feet long, 12 feet wide and seven feet deep. This trailer was attached to a Hayes BA21 truck, equipped with a power takeoff and an A-frame hoist to raise the trailer body for dumping.

With this equipment it was possible to carry a 12-cord load with a gross weight of 89,000 pounds. The fact that the trucks were able to make the eight per cent grade on a snow road without assistance speaks remarkably well for the traction. On the level they rolled their 44½ tons along at a speed of 30 miles per hour.

One of the most interesting features of the undertaking was the manner in which the huge dump was built up into the lake at the end of the overland haul.

Operations were carried on under the most severe winter conditions, with four or five feet of snow and a temperature frequently dropping to 24 below zero. The pulpwood to be moved was piled in rows on frozen swamps and speedily loaded into the trailers with an orangepeel bucket. At the other end of the road the trailer was backed down to the lakeshore and logs dumped out haphazard upon the ice. As each was discharged a layer of logs about three feet deep was evenly piled to form a deck, and then sprinkled with water, which in that temperature, froze almost immediately, forming a solid level platform over which a little earth was scattered to give traction so that the following truck could proceed still further out to drop its cargo.

With the coming of the spring thaw, this huge mass of frozen logs disintegrates with the melting ice and is carried out of the lake and down the river to the pulp plant.

Two of the Hayes truck and trailer combinations were used last winter on this operation and two more are on order, reports Claude Thicke, general manager of Hayes Manufacturing Company, Ltd., who spent some time in the east last winter at the scene of operations, studying the performance of his new equipment.

## Felt Standards Extended

Manufacturing standards governing the specification and purchase of wool felt for all important applications have been extended to include the industry's principal production and competitive numbers, the Felt Association announces. The list incorporates the well-known Society of Automotive Engineers standards for wool felt and the complementary American Society for Testing Materials methods of test, which have been in use for a number of years, and covers a majority of purchases by the Army and Navy and government contractors ,as well as civilian industries.

The standards schedule as it now stands comprises nearly 250 items in seven series, all of which are designated by wool content, width, thickness, color and tolerances. The range is from sheet felts in hard, medium and soft grades, to the very soft and pliant cushioning materials, such as are extensively used in men's clothing. Included in it is the kapok felt for sound-proofing and thermal treatment of airplane cabins.

Wool felts have more diversified uses than any other soft material of fibrous construction, and before standardization was undertaken, members of the Association (which accounts for about 95 per cent of the country's wool felt output) were individually listing several thousand merchandise numbers. All these grades were produced on the same equipment from similar mixtures or blends of fibers and differed only in the processing formula. Time-saving equivalent to an increase in capacity, due to longer runs, and improved quality control, have resulted from the systematic alignment of production under the standards program.

## New Zealand Producing Wallboard

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 20, 1942—According to a report received from C. B. Birkett, Acting Canadian Trade Commissioner at Auckland, New Zealand, the New Zealand Forest Products Limited is now operating successfully a mill which is producing 4,000 tons of wallboard per annum. This will very probably affect the market which Canada formerly had in that country, which was valued at approximately $117,000, with prospects of an increase in normal times. A second mill is nearly ready for the installation of the machinery to make cardboard, and this again may affect imports.

## Wallpaper Factories Producing Bombs

CHICAGO, Ill., July 20, 1942—Incendiary bombs dropped on Tokyo and other Japanese cities recently by Brig. Gen. Doolittle and his bombardiers were manufactured by United Wallpaper Factories, Inc., William H. Yates, president, told stockholders in a letter mailed today. The letter stated that although the company had been manufacturing bombs and other munitions for more than six months it still was producing wallpaper, this production going on simultaneously with munitions production in separate plants.

# TIMBER
## In The War Effort

TIMBER is one of the vitally important raw materials necessary in the conduct of war.

THROUGH its forestry program the Seaboard Air Line Railway is promoting timber growing in the South in accordance with the concepts of sound forestry practices.

THIS HELPS not only to insure an adequate supply for our war needs but also to build up our forests for the future benefit of our wood-using industries.

INDUSTRIAL DEPARTMENT
SEABOARD
AIR LINE RAILWAY

Warren T. White
General Industrial Agent
Norfolk, Va.



# HOW TO INCREASE FREENESS IN REJECTS REFINING
## BAUER DOUBLE-DISC PULPER OVERCOMES "SLOWNESS," CONSERVES MATERIAL

Here's what happened in a southern mill making wrapping paper and board:

This mill wanted to refine all pulp mill rejects and include them in the board furnish. Jordaning was out since the stock produced was too slow, resulting in loss of production.

The Bauer double-disc pulper, however, did the job with two important results: 1) the screen rejects were fiberized with freeness high enough to maintain high machine speed. 2) the product was better both in appearance and quality due to elimination of practically all large shives and flour.

Can Bauer pulpers help you on your furnishes? Find out by writing for details.

The BAUER BROS. CO.
SPRINGFIELD, OHIO

# IMPORTS OF PAPER

## NEW YORK IMPORTS

WEEK ENDING JULY 18, 1942

SUMMARY

Newsprint .....568 rolls

NEWSPRINT

——, ——, ——, 267 rolls.
——, ——, ——, 301 rolls.

RAGS, BAGGINGS, ETC.

——, ——, ——, 65 bls. cotton waste.

CASEIN

——, ——, ——, 305 bags.

## TAPPI Notes

Charles P. Kirchen formerly of Hollingsworth & Vose Company is now a paper research chemist for the International Business Machines Company, Endicott, N. Y.

Norman Clark, formerly of the Ault & Wiborg Company is now a research chemist for the Springfield Coated Paper Company, Camden, N. J.

The Papermakers and Associates of Southern California has organized a course in paper technology at the University of Southern California. It will begin in September and be open to men at present employed in paper mills. The course will run 15 weeks. There is to be no charge for the course as it will be under the supervision of the United States Office of Education; Engineering, Science and Management Defense Training. The course will include the followinb subjects: sulphite pulp, sulphate pulp, bleaching, special pulps for rayon and plastics, stock preparation and papermaking.

### Change in TAPPI Tentative Standard

On the recommendation of the Technical Committee of the Glassine and Greaseproof Manufacturers Association the following change has been made in tentative standard T 454 M-42, "Turpentine Test for Grease Resistance of Paper" published in the Paper Trade Journal 114, no. 16:33 (April 16, 1942). The fourth item under Apparatus has been changed to read as follows:

4. Sheets of Cumberland Gloss No. 2 supercalendered 80 lb. book paper, 25 x 38—500 basis, of convenient size 4.

A fourth footnote at the bottom of the page has been added reading, "4 Obtainable from S. D. Warren Company, Cumberland Mills, Maine.

## Goes with McIntyre Bros. Co.

Winfield E. McIntyre, president of McIntyre Brothers Paper Company, Inc., Fayetteville, New York, manufacturers of Anti Tarnish Tissue papers, announces that on July 1, Ernest F. McIntyre, his son, discontinued other interests in order to become active with the company.

The latter has been vice president of the company for several years and has kept in touch with its affairs. He also brings to the business the advantage of nearly fifteen years of activity with other mills since after six years of technical pulp and paper training at the New York State College of Forestry and the U. S. Bureau of Standards, he advanced to a department managership with the Champion Paper and Fibre Company at Canton, N. C.

Over the past two years he has been associated with Winfield E. McIntyre in the successful handling of the receivership under which the Dexter Sulphite Pulp and Paper Company has been operating until recently.

In his new connection Mr. McIntyre will assist in continuing the policy that has resulted in successful operation and has enabled the mill at Fayetteville to gain the full confidence of the trade over a period of more than thirty years.

## Foresters Work for Ample Supplies

Foresters represent a group of conservationists who are making an important contribution to democratic morale, according to a statement by the New York State College of Forestry at Syracuse University.

The dream of freedom, peace and plenty is part of the creed of the forester. Foresters are champions, not only of the most profitable use of the forests from the viewpoint of public interest, but also they encourage the spirit that should inspire efforts to produce in this country ample supplies of all commodities, and to secure their enjoyment.

Conservation is the handmaiden of democracy. This thought is elaborated by Ellery Foster in the *Journal of Forestry* for June.

The College statement suggests that, in telling the story of the conservation of the forests, foresters are exerting an effort to disabuse the minds of those who still feel that conservation is chiefly a matter of going without something today in order to have it tomorrow. "The truth is," says the statement, "that conservation of the forest, as understood by the forestry profession, is to provide an abundance for both today and tomorrow.

"Thus the forestry profession is contributing to the successful prosecution of the war, not only in providing a resource for some of the most important materials used in warfare, but developing conservation mindedness and the place it should have in a democratic form of government, both in war and in peace."

## No Ink Shortage

The National Association of Printing Ink Manufacturers has issued the following statement regarding the availability of printing ink:

"There is no restriction on the use of color by the printer or lithographer or advertiser, by any agency of the government and none is contemplated.

Supplies of the finished inks are easy. (W.P.B. bulletin T-454 released June 15, 1942.)

While it appeared in the beginning of the emergency that serious difficulties might be encountered by the ink manufacturer, changing events and modern ink research have overcome them.

Even restrictions on bronze ink and paste have been lifted for the balance of 1942.

Come what may, there will always be colors—reds, yellows, blues and blacks for all reproductive purposes.

## Great Atlantic Paper Co. Moves

The Great Atlantic Paper Co., Inc., mill agents, distributors and converters, announce that they have recently moved their headquarters to 10 East 43rd street, New York. The new telephone number is Murray Hill 2-7830.

# STARCHES
# DEXTRINES
# SYRUP

## FOR THE PAPER INDUSTRY

ANHEUSER-BUSCH, INC.
*Corn Products Division*
ST. LOUIS, MO.

# APPLETON WIRES are GOOD WIRES

APPLETON WIRE WORKS, INC.
APPLETON, WIS.

# New York Paper and Pulp Market Review

## Paper and Pulp Markets Less Active Under Seasonal Lull and Downward Trend In General Business Activity—Paper Stock Market Adversely Affected By Lower Demand and Ample Supplies.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 22, 1942.

Buying in the wholesale paper market this week reflects the normal seasonal lull and decline caused by wide curtailment in normal consumption of many types of paper, necessitated by the concentration of production in military goods. A large number of grades of paper are affected by the essential rapid progress of the war effort. Current paper production is the lowest reported for July since 1938, which was one of the few lean years in the industry.

The index of general business activity for the week ended July 11 declined to 127.0%, from 129.3% for the preceding week, compared with 128.6% for the corresponding week last year. Paper board output was 1.5% lower.

Paper production for the week ended July 11 was estimated at 67.2%, compared with 95.2% for 1941, with 93.0% for 1940, with 78.8% for 1939, and with 75.7% for the corresponding week for 1938.

Paper board production for the week ended July 11 was 52.0%, compared with 77.0% for 1941, with 72.0% for 1940, with 71.0% for 1939, and with 60.0% for the corresponding week for 1938.

In a press release of July 17, the Office of Price Administration warned newspaper and magazine publishers to resist any attempts to collect higher than ceiling prices through an illegal zone delivery scheme. Port prices for shipments to certain ports are fixed by the regulation on a basis somewhat lower than those established for shipments to surrounding zones. Leon Henderson, Price Administrator, points out that, "Newsprint destined for use in seaports, where the port price is fixed by the regulation (Maximum Price Regulation No. 130), cannot be sold or purchased for more than the $50 per ton port price."

### Wood Pulp

The OPA recently has released rulings on the protests of several pulp manufacturers. In the protest of the New York and Pennsylvania Co., relating to the maximum prices for bleached soda pulp and bleached softwood sulphite pulp, the Adminstrator stated that it deems it appropriate that the protestant be given an opportunity to present further evidence.

### Rags

Mill buying of white cotton cuttings is reported slow at this date. Roofing rags are less active and the market less firm. Demand for mixed rags is reported limited.

### Old Rope and Bagging

Old rope prices are well maintained on No. 1 Manila, under the influence of limited supplies and no important change is expected under prevailing conditions.

Scrap bagging sales are slow, despite limited supplies, which in more normal times would exert strong pressure for higher prices.

### Old Waste Paper

The supply and demand situation in old waste paper is currently affected by the usual summer lull, and the continued over supply of the leading lower grades. Current prices, per cwt. on grades are as follows: No. 1 mixed, .15 to .20; No. 1 folded news, .45 to .50; No. 1 repacked kraft, 1.55 to 1.65, and new kraft corrugated cuttings, 1.80 to 1.90.

### Twine

Twine manufacturers are calling the attention of the trade to the WPB, 944.31 Priorities Regulation No. 10, which established the allocation classification system, effective July 1. To comply with these regulations, for shipments after July 31, it is required that merchants indicate on their purchase orders the proper allocation classification symbol and purchaser's symbol.

A booklet, "Priorities Regulation No. 10 and the Allocation Classification System," may be obtained from the War Production Board, Division of Industry Operations, Washington, D. C.

## Hamersley Gets "Minute Man" Flag

On Thursday, July 16, at 12 o'clock, the employees, friends and invited guests of The Hamersley Manufacturing Company, of Garfield, N. J., celebrated the presentation of the Treasury Department's award accompanied by the "Minute Man" flag for 100% participation in the purchase of War Bonds through payroll deduction plan.

The 125 invited guests were seated on a gayly decorated platform. The 52nd Coast Artillery Band, 35 strong, from Fort Hancock, present by special permission from the Brigadier General, played superbly patriotic airs and other pieces with the occasion consonant. The 400 to 450 persons asembled in the yard of the company were both deeply moved and enthusiastic over the celebration marked by a feeling both spiritual and patriotic. A particularly effective incident was the grouping on the platform of the eight oldest employees aggregating a total of employment of some 268 years.

## D. H. Johnson Joins Robertson Co.

The Robertson Paper Company, Inc., Bellows Falls, Vt., announces the appointment of D. Harold Johnson as their general sales manager.

Mr. Johnson is a graduate of Brown University and the Harvard Graduate School of Business Administration. He has had extensive experience in sales problems, having been associated with Lever Brothers, Cambridge, Mass., in a supervisory capacity on sales and promotional work. Prior to that he was active in industrial and sales management survey work throughout the country.

This appointment comes on the fiftieth anniversary of the Robertson Paper Company.

# West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

**ENGLISH FINISH SUPERCALENDERED MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS**

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

**HIGH GRADE COATED BOOK**

• • • •

**KRAFT WRAPPING AND KRAFT ENVELOPE**
**KRAFT LINER BOARD**
**BLEACHED SULPHITE AND SODA PULP**
**BLEACHED AND UNBLEACHED KRAFT PULP**

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina



★ ★ ★ ★ ★ ★

# THESE MEN are READY!

*"call them when YOU want them"...*

**CYLINDER COVERING** *Service* **REPRESENTATIVES**

Walter Slattery ★ MIDDLETOWN, OHIO — RES. FRANKLIN PIKE, TEL. MID. 2306
Robert Sinclair ★ KALAMAZOO, MICH. — 1020 EGLESTON AVE. TEL. KAL. 2-5641
James Symonds ★ SEATTLE, WASH. — 8337-26TH AVE. TEL. CAP. 7026
Herbert Roberts ★ PHILADELPHIA, PA. — 49 WAVERLY RD. TEL. HILLTOP 4845
★ 5 men out of MASS.

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FOURDRINIER WIRES • CYLINDER WIRES • CYLINDER MOLDS • CYLINDER COVERS • DANDY ROLLS & DANDY ROLL-STANDS

The SINCLAIR Company
HOLYOKE, MASS.



# LOBDELL

## micrometer ROLL CALIPER

Check every roll before it is set in the stack—make sure the roll below it has also been checked. Check up on re-grinding and on new rolls, too.

## Its systematic use will Save Precious TIME and money

This will greatly reduce the chances of starting a run with worn rolls in the stacks and correspondingly reduce the number of stops to change them.

It is easy to use the LOBDELL Micrometer ROLL Calender. It is light in weight, quickly adjustable to a wide range of roll diameters by movement of a single pinion.

About 69c per day will write off the cost of a LOBDELL Micrometer Caliper in one year.

Write NOW for prices and any further information.

# LOBDELL

**C O M P A N Y**

107 YEARS IN BUSINESS

**WILMINGTON, DELAWARE**

# MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 22, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b., works. Demand reported good for the week.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand reported moderate for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are unchanged for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 15 cents per pound; 80-100 mesh, at 15½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, is currently offered at 13 cents per pound, c.i.f. No quotations on French casein.

CAUSTIC SODA—Quotations on caustic soda are firm and continue unchanged at prevailing market prices. Demand reported good. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported fair at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Market strong. Government demand is reported heavy during the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with higher prices on some grades. "G" gum rosin is currently quoted at $3.20 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.05 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.41 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand moderate for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake is nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported moderate for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported moderate for the current week. The commercial grades are currently quoted at from $1.15 to $1.25; iron free at from $1.75 to $1.85 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

# MARKET QUOTATIONS

**All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.**

## Paper

(Delivered New York)

| | | | |
|---|---|---|---|
| News, per ton— | | | |
| Roll, contract | $50.00 | @ | — |
| Sheets | 58.00 | " | — |
| **Kraft—per cwt.—Carload Quantities** | | | |
| * Delivered Prices | | | |
| Extra Quality | $6.00 | @ | $7.00 |
| Superstandard | 5.25 | " | 6.25 |
| * No. 1 Wrapping | 5.00 | " | — |
| * Standard Bag | 4.37½ | " | — |
| **Tissues—Per Ream—Carlots** | | | |
| White No. 1 | 1.12½ | " | — |
| White No. 1 M. G. | 1.05 | " | — |
| White No. 1½ | 1.00 | " | — |
| White No. 2 | 1.00 | " | — |
| Anti-Tarnish M. G. | .95 | " | — |
| Colored | — | " | — |
| Kraft | .95 | " | — |
| Manila | .90 | " | — |
| Unbl. Toilet, 1 M. | 4.16 | " | — |
| Bleached Toilet | 5.70 | " | — |
| **Paper Towels, Per Case** | | | |
| Unbleached, Jr. | 2.35 | " | — |
| Bleached, Jr. | 2.65 | " | — |
| **Manila—per cwt.—C l f a** | | | |
| No. 1 Jute | 11.25 | @ | — |
| No. 1 Manila Wrapping, 35 lb. | 5.50 | " | 5.75 |
| No. 2 Manila Wrapping, 35 lb. | 5.25 | " | 5.50 |
| **Boards, per ton—** | | | |
| News | *48.00 | @ | — |
| Chip | *45.00 | " | — |
| Sgl. Mla. Ll. Chip | *60.00 | " | — |
| White Pat. Coated | *75.00 | " | — |
| Kraft Liners 50 lb. | *60.00 | " | — |
| Binders Boards | 84.00 | " | 116.00 |

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

**The following are representative of distributors' resale prices:**

**Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:**

| | Bonds | | Ledgers |
|---|---|---|---|
| 100% Rag Ext. No. 1 | $40.25 | @ $47.25 | $41.40 @ $48.50 |
| 100% Rag | 32.20 " 37.75 | | 33.35 " 39.25 |
| 85% Rag | .... " .... | | 32.20 " 37.75 |
| 75% Rag | 24.75 " 29.00 | | 25.90 " 30.50 |
| 65% Rag | .... " .... | | 22.80 " 27.75 |
| 50% Rag | 18.70 " 22.75 | | 19.90 " 24.25 |
| 25% Rag | 16.40 " 20.00 | | 17.55 " 21.50 |

Colors at $1.00 cwt. extra.

**Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:**

| | Bonds | | Ledgers |
|---|---|---|---|
| No. 1 | $10.55 @ $12.75 | | $11.70 @ $14.25 |
| No. 2 | 9.65 " 11.75 | | 10.80 " 13.25 |
| No. 3 | 9.20 " 11.25 | | 10.35 " 12.50 |
| No. 4 | 8.90 " 10.75 | | 10.05 " 12.25 |

Colors $1.00 cwt. extra.

**Free Sheet Book Papers—White, Cased Paper.**

Delivered in Zone 1:

| | | | |
|---|---|---|---|
| No. 1 Glossy Coated | $13.65 | @ | $13.90 |
| No. 2 Glossy Coated | 12.40 | " | 14.00 |
| No. 3 Glossy Coated | 11.60 | " | 12.25 |
| No. 4 Glossy Coated | 11.15 | " | 12.75 |
| No. 1 Antique (watermarked) | 10.25 | " | 11.75 |
| No. 2 Offset | 9.60 | " | 11.00 |
| A Grade E. F. | 9.35 | " | 10.75 |
| A Grade S. & S. C. | 9.60 | " | 11.00 |
| B Grade E. F. | 8.85 | " | 10.25 |
| B Grade S. & S. C. | 9.10 | " | 10.50 |
| C Grade E. F. | 8.55 | " | 9.75 |
| C Grade S. & S. C. | 8.80 | " | 10.00 |
| D Grade E. F. | 8.25 | " | 9.50 |
| D Grade S. & S. C. | 8.50 | " | 9.75 |

Ivory & India at $.50 cwt. extra.

## Wood Pulp

**OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.**

| | |
|---|---|
| Bl. Softwood Sulphite | $76.00 |
| Unbl. Softwood Sulphite | 64.00 @ 66.00 |
| Bl. Hardwood Sulphite | 73.50 |
| Unbl. Hardwood Sulphite | 63.50 |
| Bl. Mitscherlich | 81.00 |
| Unbl. Mitscherlich | 72.00 |
| N. Bleached Sulphate | 86.00 |
| S. Bleached Sulphate | 79.00 |
| N. Semi-Bleached Sulphate | 62.00 |
| S. Semi-Bleached Sulphate | 75.00 |
| N. Unbl. Sulphate | 72.00 |
| S. Unbl. Sulphate | 63.50 |
| Bl. Soda | 65.00 |
| Unbl. Soda | 62.00 |
| Groundwood | 46.00 |

**Transportation Allowances Applying to Producers of Wet Wood Pulp.**

| | Below 50% Air Dry Weight |
|---|---|
| Northeast | $13.50 |
| Lake Central | 13.50 |
| Southern | 16.00 |
| West Coast (in area) | 10.50 |
| West Coast (out area) | 16.50 |
| | 50%-80% Air Dry Weight |
| Northeast | $11.50 |
| Lake Central | 11.50 |
| Southern | 14.00 |
| West Coast (in area) | 9.50 |
| West Coast (out area) | 13.50 |

**Applying to Producers of Dry Wood Pulp.**

| | Above 80% Air Dry Weight |
|---|---|
| Northeast | $8.50 |
| Lake Central | 8.50 |
| Southern | 11.00 |
| West Coast (in area) | 7.50 |
| West Coast (out area) | 13.50 |

**Should freight charges actually exceed these allowances, the difference may be added to the maximum price.**

## Domestic Rags

**New Rags**

(Prices to Mill f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White, No. 1 | 8.00 | @ | 8.25 |
| Silesias No. 1 | 4.50 | " | 4.75 |
| New Unbleached | 8.00 | " | 8.25 |
| Blue Overall | 5.75 | " | 6.00 |
| Fancy | 3.00 | " | 3.25 |
| Washables | 2.50 | " | 2.75 |
| Mixed Khaki Cuttings | 2.50 | " | 2.75 |
| O. D. Khaki Cuttings | 3.00 | " | 3.15 |

## RECORD PAPER & PULP STOCK VALVES, "BONNETLESS SELF CLEARING"---"RESIDUE POCKETLESS TYPE"

**METALS — I.B.B.M., all iron, bronze or stainless steels, body parts plain or rubber lined.**

*The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.*

- The **"FAST THREADED"** screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

***"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS."***

**RECORD FOUNDRY & MACHINE COMPANY**

LIVERMORE FALLS, MAINE, U. S. A.

---

*More than just a* TRADE MARK

EXCELSIOR KNOX Woolen Co. Camden Me. FELTS & JACKETS

**BUT also a guarantee by men who for 78 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.**

**KNOX WOOLEN CO.**
**CAMDEN, MAINE.**

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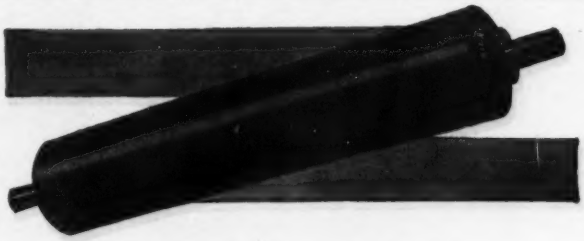

## BETTER ROLLS

**Tensilastic Rubber Rolls are better rolls. They hold their crown longer, have uniform density throughout the roll and, they have correct Modulus—the ability to snap back to normal quickly after pressure at the nip.**

★ ★ ★

**We rubber cover and rubber line tanks, vats, propellers and other equipment requiring protection against acids, alkaline solutions and their fumes.**

**AMERICAN WRINGER CO., INC.**

*Rubber Roll Specialists for 50 Years*

**Woonsocket, R. I.** **Farhnam, Que.**

**• *TENSILASTIC* •**

---

# HIGHEST QUALITY CLAYS

**LUMP and POWDERED** } **IMPORTED** **DOMESTIC** { **CRUDE CRUSHED AIR FLOATED WATER WASHED**

### Old Rags

| | | | |
|---|---|---|---|
| White, No. 1— | | | |
| Repacked | *3.80 | " | — |
| Miscellaneous | *3.20 | " | — |
| White, No. 2— | | | |
| Repacked | *2.90 | " | — |
| Miscellaneous | *2.65 | " | — |
| Third and Blues— | | | |
| Repacked | *2.20 | " | — |
| Miscellaneous | *1.80 | " | — |
| Roofing Rags— | | | |
| No. 1 | *1.55 | " | — |
| No. 2 | *1.45 | " | — |
| No. 3 (bagging) | *1.35 | " | — |
| No. 4 | *1.35 | " | — |
| No. 5A | *1.35 | " | — |
| * Old Manila Rope | 5.75 | " | — |

*OPA Maximum Prices.

### Foreign Rags

All prices nominal

| | | | |
|---|---|---|---|
| **New Rags** | | | |
| New Dark Cuttings | 2.25 | @ | 2.40 |
| New Mixed Cuttings | 2.00 | " | 2.20 |
| New Light Silesias | 5.50 | " | 5.75 |
| Light Flannelettes | 5.50 | " | 5.75 |
| New White Cuttings | 7.00 | " | 7.50 |
| New Light Oxfords | 4.00 | " | 4.50 |
| New Light Prints | 3.00 | " | 3.25 |
| **Old Rags** | | | |
| No. 1 White Linens | 7.50 | " | 8.50 |
| No. 2 White Linens | 6.50 | " | 7.50 |
| No. 3 White Linens | 4.50 | " | — |
| No. 4 White Linens | 2.25 | " | 3.25 |
| No. 1 White Cotton | 4.25 | " | 4.75 |
| No. 2 White Cotton | 3.25 | " | 3.75 |
| No. 3 White Cotton | 2.50 | " | 3.00 |
| No. 4 White Cotton | 1.90 | " | 2.20 |
| Extra Light Prints | 2.00 | " | 2.40 |
| Ord. Light Prints | 1.75 | " | 2.15 |
| Med. Light Prints | 1.55 | " | 1.95 |
| Dutch Blue Cottons | 2.25 | " | 2.50 |
| French Blue Linens | 3.00 | " | — |
| Checks and Blues | 2.00 | " | — |
| Linsey Garments | 1.90 | " | 2.00 |
| Dark Cottons | 1.50 | " | 1.60 |
| Old Shopperies | 1.30 | " | 1.45 |
| New Shopperies | 1.45 | " | 1.50 |
| French Blues | 2.25 | " | 2.50 |

### BAGGING

(Prices to Mill, f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | Nominal | | |
| Domestic | 4.00 | @ | 4.25 |
| Wool Tares, light | 4.25 | " | 4.50 |
| Wool Tares heavy | 4.50 | " | 4.75 |
| Bright Bagging | 4.50 | " | 4.85 |
| Manila Rope— | | | |
| Foreign | — | " | — |
| Domestic | *5.75 | " | — |
| Jute Threads | 4.25 | " | 4.75 |
| Sisal Strings | 3.25 | " | 3.75 |
| Mixed Strings | 1.10 | " | 1.20 |

* OPA Maximum Price.

### Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

| | | | |
|---|---|---|---|
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | @ | — |
| No. 1 Hard White Envelope Cuts | 3.12½ | " | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| No. 1 Hard White Shavings, ruled | 2.50 | " | — |
| Soft White Shavings, one cut | 2.87½ | " | — |
| No. 1 Soft White Shavings | 2.50 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 Fly Leaf Shavings | 1.67½ | " | — |
| No. 2 Fly Leaf Shavings | 1.12½ | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 1.25 | " | — |
| No. 2 Mixed Groundwood Fly Leaf Shavings | .90 | " | — |
| Mixed Colored Shavings | .75 | " | — |
| Mixed Groundwood Colored Shavings | .90 | " | — |
| Overissue Magazines | 1.67½ | " | — |
| No. 1 Heavy Books & Magazines | 1.57 | " | — |
| Mixed Books | 1.07½ | " | — |
| No. 1 White Ledger | 2.17½ | " | — |
| No. 2 Mixed Ledger, colored | 1.87½ | " | — |
| New Manila Envelope Cuttings, one cut | 2.87½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| Extra Manilas | 1.85 | " | — |
| Mixed Kraft, Env. & Bag Cuttings | 2.75 | " | — |
| Kraft Envelope Cuttings | 3.25 | " | — |
| Triple Sorted, No. 1 Brown Soft Kraft | 2.50 | " | — |
| New 100% Kraft Corrugated Cuttings | 2.25 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| New Jute Corrugated Cuttings | 1.75 | " | — |
| Old Corrugated Containers | 1.00 | " | — |
| Box Board Cuttings | .72½ | " | — |
| White Blank News | 1.65 | " | — |
| Overissue News | .85 | " | — |
| No. 1 News | .75 | " | — |
| No. 1 Mixed Paper | .70 | " | — |

### Twines

(F. o. b. Mill)

(Soft Fiber)

| | | | |
|---|---|---|---|
| Coarse Polished— | | | |
| India | .21 | @ | — |
| White Hemp | .21 | " | — |
| Fine Polished— | | | |
| Fine India | .26 | " | — |
| Unpolished— | | | |
| Box | .17½ | " | — |
| Paper Makers | .17 | " | — |
| Tube Rope | .19 | " | — |
| Wall Paper | .20½ | " | — |
| Wrapping | .23 | " | — |
| Soft Fiber Rope | .19 | " | — |
| Cotton | .25 | " | — |
| (Hard Fiber) | | | |
| Medium Java | .18 | " | — |
| Mex. Sisal | .16 | " | — |
| Manila | — | " | — |

## PHILADELPHIA

### Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White No. 1 | .07¼ | @ | .07½ |
| New White No. 2 | .04½ | " | .05 |
| Light Silesias | .04½ | " | .04¾ |
| Silesias, No. 1 | .04 | " | .04¼ |
| Black Silesias, soft | .03¾ | " | .04 |
| New Unbleached | .07¼ | " | .07½ |
| Washable Prints | .03¾ | " | .03½ |
| Washable No. 1 | .02 | " | .02¼ |
| Blue Overall | .04½ | " | .05½ |
| Cottons—According to grades— | | | |
| Washable shredding | — | " | .01¾ |
| Fancy Percales | .03¼ | " | .03¾ |
| New Black Soft | .02¾ | " | .03 |
| New Dark Seconds | 1.75 | " | 2.00 |
| Khaki Cuttings— | | | |
| No. 1 O. D. | .03 | " | .03¼ |
| No. 2 Mixed | .02¼ | " | .02½ |
| Corduroy | .01¾ | " | .02¼ |
| New Canvas | .04¾ | " | .05¼ |
| New Black Mixed | — | " | .02½ |

### Domestic Rags (Old)

| | | | |
|---|---|---|---|
| White No. 1—Repacked | 3.80 | " | — |
| White No. 2—Repacked | 2.90 | " | — |
| Miscellaneous No. 1 | 3.20 | " | — |
| Miscellaneous No. 2 | 2.65 | " | — |
| Thirds and Blues— | | | |
| Miscellaneous | 1.80 | " | — |
| Repacked | 2.20 | " | — |
| Black Stockings— (Export) | Nominal | | |
| Roofing Stock— | | | |
| Foreign No. 1 | Nominal | | |
| Domestic No. 1 | 1.55 | " | — |
| Domestic No. 2 | 1.45 | " | — |
| Roofing Bagging | 1.35 | " | — |
| Old Manila Rope | 5.75 | " | — |

### Bagging

(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | Nominal | | |
| Domestic | 3.00 | " | 3.50 |
| Sisal Rope | 3.75 | " | — |
| Mixed Rope | .75 | " | 1.00 |
| Scrap— | | | |
| No. 1 | 3.25 | " | 3.50 |
| No. 2 | 1.75 | " | 1.80 |
| Wool Tares, heavy | 4.00 | " | 4.25 |
| No. 1 New Light Burlap | 3.00 | " | 4.00 |
| New Burlap Cuttings | 3.75 | " | 4.00 |

### Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

| | | | |
|---|---|---|---|
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | " | — |
| No. 1 Hard White Shavings, unruled | 2.50 | " | — |
| Soft White Shavings, one cut | 2.87½ | " | — |
| White Blank News | 1.65 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 White Ledger | 2.17½ | " | — |
| No. 2 Ledger, colored | 1.87½ | " | — |
| No. 1 Heavy Books & Magazines | 1.57 | " | — |
| Overissue Magazines | 1.67½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| No. 1 Mixed Paper | .70 | " | — |
| Box Board Cuttings | .72½ | " | — |
| Jute Corrugated Cuttings | .90 | " | — |
| Overissue News | .85 | " | — |
| No. 1 News | 1.00 | " | — |

## BOSTON

### Old Papers

(F. o. b. Boston)

OPA Maximum Prices

| | | | |
|---|---|---|---|
| No. 1 Hard White Shavings, unruled | 2.87½ | @ | — |
| No. 1 Fly Leaf Shavings | 1.67½ | " | — |
| No. 2 Fly Leaf Shavings | 1.12½ | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 1.25 | " | — |
| No. 2 Groundwood Fly Leaf Shavings | .90 | " | — |
| Mixed Colored Shavings | .75 | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| Hard White Envelope Cuts, one cut | 3.37½ | " | — |
| Triple Sorted No. 1 Brown Soft Kraft | 2.50 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| Kraft Envelope Cuttings | 3.25 | " | — |
| No. 1 Heavy Books & Magazines | 1.57 | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| White Blank News | 1.65 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| No. 1 Mixed Paper | .70 | " | — |
| Overissue News | .85 | " | — |
| Box Board Cuttings | .72½ | " | — |
| New Corrugated Cuttings, Kraft | 2.25 | " | — |
| Old Corrugated Containers | 1.00 | " | — |
| Jute Corrugated Cuttings | 1.07½ | " | — |

### Bagging

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Gunny Bagging— | | | |
| Foreign | (nominal) | | |
| Domestic | 4.50 | @ | 5.00 |
| Sisal Rope | 4.50 | " | 5.00 |
| Mixed Rope | 1.25 | " | 1.40 |
| Transmission Rope— | | | |
| Foreign | (nominal) | | |
| Domestic | 4.00 | " | 4.25 |
| Manila Rope— | | | |
| Foreign | (nominal) | | |
| Domestic | 5.75 | " | — |
| Soft Jute Rope | 5.25 | " | 5.50 |
| Jute Carpet Threads | 3.25 | " | 3.50 |
| Bleachery Burlap | 8.50 | " | 9.00 |
| Scrap Burlap— | | | |
| Foreign | (nominal) | | |
| Domestic | 4.50 | " | — |
| Scrap Sisal | 4.75 | " | 5.00 |
| Scrap Sisal for Shredding | 5.50 | " | 5.75 |
| Wool Tares— | | | |
| Foreign | (nominal) | | |
| Domestic | 5.00 | " | 5.75 |
| Aust. Wool Pouches | 5.00 | " | 5.10 |
| New Burlap Cuttings | 5.25 | " | 5.50 |
| Heavy Baling Bagging | 4.75 | " | 5.00 |

### Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | " | — |
| No. 1 Hard White Shavings, unruled | 2.50 | " | — |
| No. 1 Soft White Shavings | 2.50 | " | — |
| No. 1 White Ledger | 2.17½ | " | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| No. 1 Hard White Shavings, ruled | 2.50 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| Paper Mill Bagging | 3.00 | " | 3.25 |
| No. 2 Bagging | 1.35 | " | — |

* OPA Maximum Price.

### Domestic Rags (New)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New Light Prints | .04½ | @ | .04¾ |
| Fancy Percales | .04¼ | " | .05 |
| New White No. 1 | .07 | " | .07½ |
| New Light Flannelettes | .06 | " | .06¾ |
| Canton Flannel, Bleached | .08¾ | " | .09¾ |
| Underwear Cutters, Bleached | .06½ | " | .06¾ |
| Underwear Cutters, Unbleached | 6.50 | " | 6.75 |
| Silesias No. 1 | .06 | " | .06¾ |
| New Black Silesias | .03¾ | " | .04 |
| Red Cotton Cuttings | .03½ | " | .04 |
| Soft Unbleached | .07½ | " | .07¾ |
| Blue Cheviots | .06 | " | — |
| Fancy | .02¾ | " | — |
| Washable | .02¾ | " | — |
| Cottons According to Grades— | | | |
| Blue Overalls | — | " | .05½ |
| New Black, Soft | .03¾ | " | .04 |
| Khaki Cuttings | .04¼ | " | .04¾ |
| O. D. Khaki | .04¼ | " | .04¾ |
| Corduroy | .03½ | " | .03¾ |
| New Canvas | .07 | " | .07½ |
| B. V. D. Cuttings | .07¾ | " | .08 |

### Domestic Rags (Old)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked | 3.80 | @ | —* |
| Miscellaneous | 3.20 | " | —* |
| White No. 2— | | | |
| Miscellaneous | 2.65 | " | —* |
| Twos and Blues, Repacked | 2.20 | " | —* |
| Old Blue Overalls | 2.25 | " | 2.30 |
| Thirds and Blues, Repacked | 2.20 | " | —* |
| Miscellaneous | 1.80 | " | —* |
| Black Stockings | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| No. 1 | 1.55 | " | —* |
| No. 2 | 1.45 | " | —* |
| No. 3 | 1.35 | " | —* |
| No. 4 | 1.35 | " | —* |
| No. 5, Quality A | 1.35 | " | —* |
| Quality B | 1.20 | " | —* |
| Quality C | .95 | " | —* |
| * Old Manila Rope | 5.75 | " | — |

* OPA Maximum Prices.

### Foreign Rags

(F. o. b. Boston)

| | |
|---|---|
| Canvas | (nominal) |
| Dark Cottons | (nominal) |
| Dutch Blues | (nominal) |
| New Checks and Blues | (nominal) |
| Old Fustians | (nominal) |
| Old Linsey Garments | (nominal) |
| New Silesias | (nominal) |

## CHICAGO

| | | | |
|---|---|---|---|
| No. 1 Heavy Books & Magazines | 1.57 | " | — |
| White Blank News | 1.65 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| Overissue News | .85 | " | — |
| No. 1 News | .75 | " | — |
| No. 1 Mixed Paper | .70 | " | — |
| No. 1 Roofing Rags | 1.55 | " | — |
| No. 2 Roofing Rags | 1.45 | " | — |